100% AMIGA

Amazing COMPUTING™
Your Original AMIGA® Monthly Resource

For The Commodore AMIGA®

Volume 5 No. 4 April 1990
US $3.95 Canada $4.95

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- HARDWARE PROJECT: BIO-FEEDBACK DEVICE

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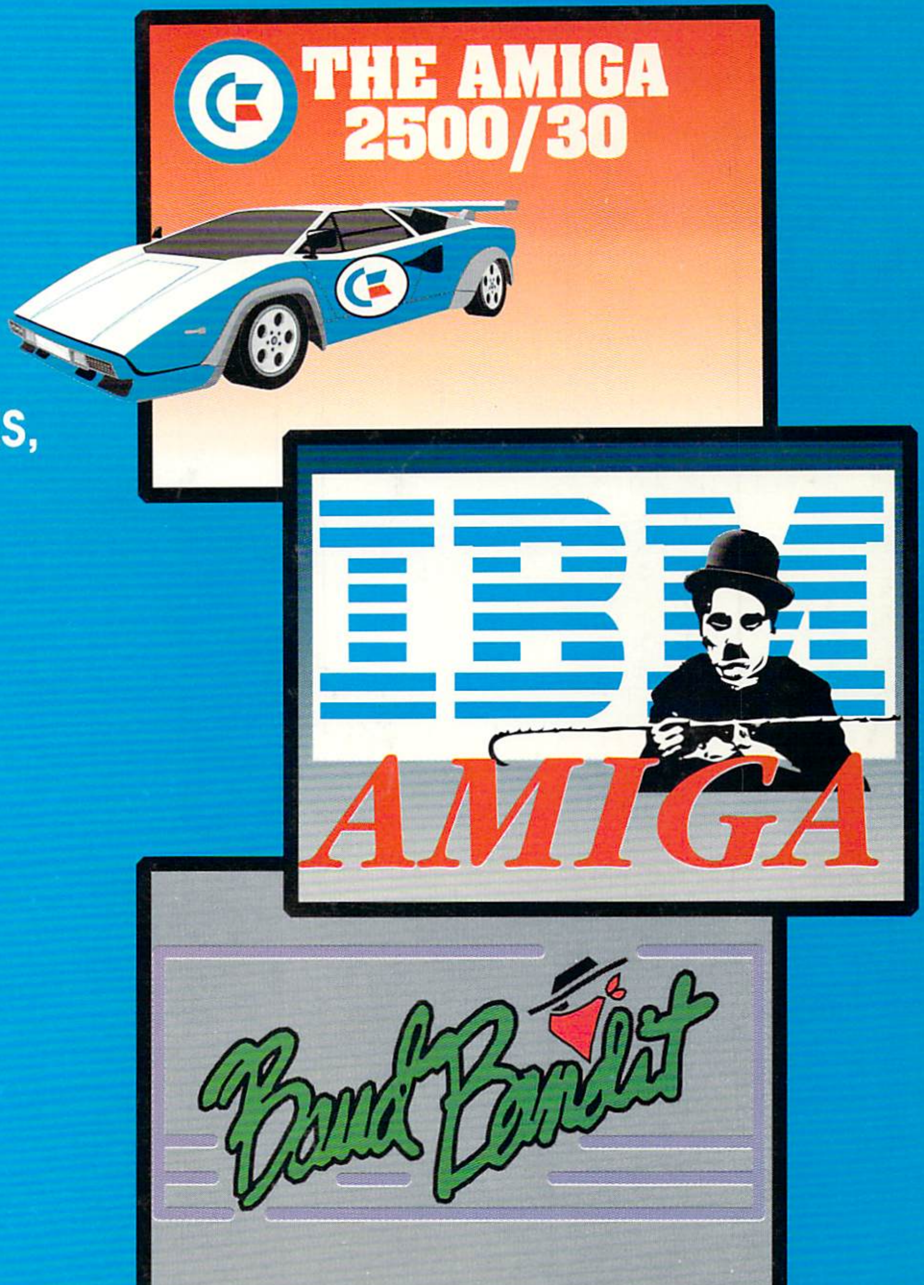

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No. 4
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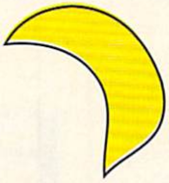

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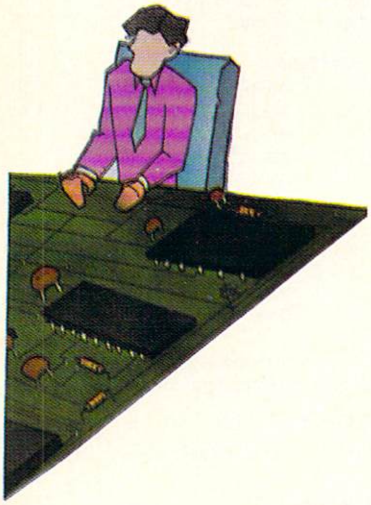

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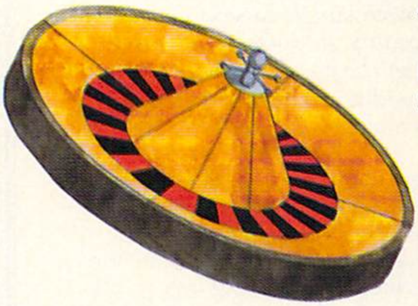

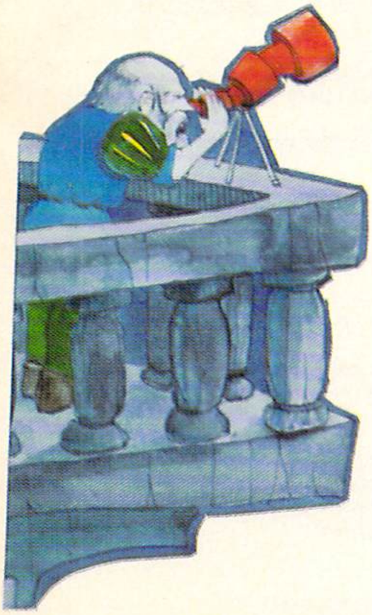

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SPECIAL THANKS TO:
Buddy Terrell & Byrd Press
Bob at Riverside Art, Ltd.
Swansea One Hour Photo
Pride Offset, Warwick, RI
Mach 1 Photo

Amazing Computing™ (**ISSN 0886-9480**) is published monthly by PiM Publications, Inc., Currant Road, P.O. Box 869, Fall River, MA 02722-0869.

Subscriptions in the U.S., 12 issues for **$28.00**; in Canada & Mexico surface, **$36.00**; foreign surface for **$44.00**.

Second-Class Postage paid at Fall River, MA 02722 and additional mailing offices.

POSTMASTER: Send address changes to PiM Publications Inc., P.O. Box 869, Fall River, MA 02722-0869. Printed in the U.S.A.

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Video Computer Retailers	Chesapeak
Virginia Micro Systems	Woodbridge
Washington	
Amazing Electronics	Spokane
Apple Valley Computers	E. Wenatchee
Bits, Bytes and Nibbles	Spokane
Brentano's	Seattle
Bull Dog News	Seattle
Butlers Computer Service	Federal Way
Byte World	Kent
Computer Quest	Edmonds
Computers + Inc.	Tacoma
Family Computers	Everett
Micro Age Computer Store	Bellevue
Nybbles & Bytes	Tacoma
Omni International	Seattle
Port Book and News	Port Angeles
Steve's Broadway News	Seattle
Swan Computers	Yakima
Take A Byte	Kennewick
Tech Star	Kent
The Computer Shoppe	Vancouver
Tower Books	Bellevue
Tower Books	Seattle
Tower Books	Tacoma
Y Not Magazines and Books	Federal Way
Wisconsin	
20th Century Books	Madison
Computer Software Center	Milwaukee
Fox Valley Personal Computer	Oshkosh
Madison Programmer's Guide	Madison
Mom's Computers	Stevens Point
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TMW Software Inc.	Wausau
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From The Managing Editor

AMIGA Developers Association, Birth Of An Organization

On Thursday, March 15, 1990, 130 Amiga developers and supporters met in Washington, DC for the initial creation of the Amiga Developers Association. This event was sponsored by IDG Communications through their Amiga publication, AmigaWorld. Opening speeches were delivered by Doug Barney, Editor of AW and Steve Robbins, Vice President/Group Publisher of IDG Communications.

When I first received the news that an independent Amiga Developers Association was being formed, I was extremely pleased. This group, formed from individuals who are financially committed to the Amiga, would have the ability to establish standards and suggest changes to Commodore. Coming from the perspective of the ADA, Commodore would receive a great deal of vision free from an organization which would have the most to gain from a successful Commodore Amiga.

If I had any doubts as to the acceptance and the serious attention that CBM would pay to the ADA, they vanished when the President and Chief Operating Officer of Commodore Business Machines, Inc., Harry Copperman was introduced. Mr. Copperman addressed the group on the direction he has been able to attain at CBM in the past nine months and the needs of CBM and the ADA.

Mr. Copperman listed his point by point strategy and objectives for Commodore and the Amiga.

1. Enhance Commodore's image.
2. Strengthen the distribution channel.
3. Focus on the Amiga.
4. Enter new markets with the Amiga.
5. Insure customer satisfaction.

Mr. Copperman's attendance not only proved his dedication to improving Amiga developer and CBM relations, but it demonstrated that the ADA was a viable medium to make these things happen. Several members made points and discussed problems openly with Mr. Copperman. To the credit of Mr. Copperman and the other members of the ADA, the points were raised and the problems were discussed in a positive manner. Every effort was made to keep the meeting running forward, to meet the goals of establishing an organization which will be able to meet the needs of the entire Amiga Community.

Once the speeches were complete, the business of organization came to hand. The one thing we most often forget when we think about the Amiga community is that it is extremely independent. A suggested format of operations and guidelines was prepared by IDG, however the IDG people were often tested by individuals as to why certain procedures were being used and not others. Everyone in the room understood the importance of the ADA to become a strong and completely democratic trade association.

After directing the initial voting for officers, and providing lunch, the IDG sponsors released the meeting to the Amiga participants. The meeting then split into two groups. Amiga Developers, those participants who develop either software or hardware for the Amiga and are not members of the press, began the arduous task of electing further officers and creating the bylaws of the organization. Associate members, all those participants who were not eligible as Amiga Developers, were moved aside to elect their own representatives to the ADA.

The main officers elected were–Chairman: Mike Halvorson, President of Impulse, Inc., First Vice Chairperson: Andrea Geiger, National Sales Manager for Telemak, Second Vice Chairperson: Melissa Jordan Grey, President of Blue Ribbon Bakery, Treasurer: Bruce Benesh, Marketing Director of Applied Engineering, and Secretary: Rick Rodriguez, President of VRS Media.

The ADA's temporary mailing address is:
Amiga Developers Association
Attention Wendie Marro
80 Elm Street
Peterborough, NH 03458

During the initial meeting, Mr. Halvorson was given full credit for the original idea of the ADA. In a press release circulated the following day, Mr. Halvorson, as President of the ADA, said, "The purpose of this organization as I see it is trifold. First, we want to improve communications—between developers, between developers and end users, and most importantly, between developers and Commodore. Secondly, we want to improve the overall marketing of Amiga products and third, we'd like to develop a unified strategy to combat software piracy."

Every ADA member was there to produce better Amiga software and hardware. Each individual may have had a number of complaints and disagreements with other attendees, but they were all put aside so that a better organization could develop.

I attended ADA with the hope that something good would be formed to help the entire Amiga community. The thought of a completely independent developer organization created to support a single computer platform is revolutionary. As one person near me said, "I have always wondered what an AmiEXPO or a Developer's Conference was like, but this is nothing like you see in the magazine."

He was answered by another attendee with graying hair, "This is nothing like you have ever heard of before. These people are creating an organization to grow and develop a better Amiga market. What you are seeing are the labor pains of that birth. It is their golden opportunity and they are determined to do their best."

I have seen a lot of innovation in this Amiga marketplace. I have watched as companies produced better tools than their competitors, only to be bettered by someone else. But, the ability of these same competitive, determined people to sit together and establish an organization for open and candid cooperation makes me very happy I decided to produce an Amiga magazine so long ago.

Sincerely,

Don Hicks
Managing Editor

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FEEDBACK

Dear AC:

I read in your magazine *Amazing Computing for the Commodore Amiga* (V4.11 PP. 81-83) an article titled *Fast Fractals* by Hugo M.H. Lyppens. I understand *Fast Fractals* is a program developed by Lyppens to make fractal pictures on the Amiga. I am interested in developing my own fractal pictures, and I think this program would be very helpful to do it.

I would be very grateful if you send me some information about how the program works, where can I buy it in U.S.A. and how much it costs. Thank you in advance for your attention.

Sincerely,
María Espínola
Mexico

All our listings are available on AC disks, but the one you are looking for is on AC disk #6. -Ed

Dear AC:

I am a new Amiga user, having bought my A2000 only about three months ago. Previously I owned an old Atari ST. I had thought I would have problems replacing all my ST software, but this has turned out to be much easier than I expected. There's a lot of good Amiga software to be had.

The only exception has been programming languages. First I bought GFA BASIC, which I was familiar with from using ST. Without going into great detail, I can say that the Amiga version needs more work before I will be happy to use it.

My next purchase was the Lattice C compiler. Several people had told me that Lattice C was the best C compiler available for the Amiga. I hoped it would be comparable to Megamax Laser C which I had been using for some time. Having now tried Lattice C, I find that it works reliably, but that is the only praise I can really offer it. It has no graphic user interface, a primitive text editor, and compiler speeds are best described as sluggish. The Lattice text editor is particularly disappointing after using the state-of-the-art Laser editor.

As a result of this experience I wrote to Megamax suggesting (i.e. pleading) that they port Laser C to the Amiga. If you at AC would be kind enough to print this letter, maybe we can get some other Amiga users to write to Megamax about this. After all, it seems a waste for Megamax to offer such outstanding software only to an ever-dwindling ST market. Megamax can be reached at this address:

Megamax Inc.,
P.O. Box 851521
Richardson, TX 75085.

Sincerely,
Tony L. Belding
Hamilton, TX

Tony, we contacted Lattice, Inc. to get a response, and here it is. -Ed

Thank you for allowing us to respond to the letter sent to you by Tony Belding comparing Lattice's Amiga C Compiler to Megamax's Atari C. We here at Lattice are not currently familiar with Megamax's Atari C Compiler. However, I would like to address Mr. Belding's concerns.

From user comments and reviews in many publications showing Lattice as the fastest C compiler available for the Amiga, I suspect that Mr. Belding may be comparing apples to oranges. Perhaps Mr. Belding is comparing a full-featured, professional compiler to a stripped-down compiler. Lattice developers have always given high priority to the quality of the code generated—followed by speed of compilations.

In addition, Lattice C Compilers address the speed of the Complete development cycle. Lattice offer hundreds of C library functions to

Amazing Computing
PiM Publications, Inc.
P. O. Box 869
Fall River, MA 02722

Dear AC,

I found your DeskTop Publishing Issue very interesting and informative. It is a pleasure to see your evaluations of the various products, in what appears to this observer, to be a balanced and well-researched manner. As you know, some of the Amiga Magazines have a close relationship with one of the DeskTop Publishing Software vendors and this relationship is reflected in their editorial coverage. Also many of the articles I've seen have been not well researched and were sometimes inaccurate. AC (whatever you use to publish your magazine) seems to have retained its objectivity.

There was one point that I wanted to raise. In your well-researched comparison feature table, you noted that none of the packages could flow text INSIDE an object. While this is technically true, it's sort of a case of how you view a doughnut—do you look at the doughnut or the hole?

For example, every circle can be approxomated (quickly) by two concave polygons. I did this one in PageStream. With Pagestream, it's especially easy because you only have to draw the left half of the polygon, duplicate and rotate it 180 degrees to get the other half. The polygons, themselves, are drawn using an invisible line style.

Sincerely,

Kevin Donaldson

NEWS *flash!*

How does one keep on top of the latest developments in the ever-changing Amiga market? Well, it's not easy. The hours are long, and the glass sometimes sticks to your ear. But persitence can pay off. The following tidbits were gathered at AmiEXPO '90 in Washington DC. Look for a full show report, complete with all the latest gossip, in our upcoming May issue.

ASDG, Inc.: Now shipping is **LAN Rover**, ASDG's new high-performance Ethernet board for the Amiga. Also just introduced by ASDG is **The Art Department**, a new full-featured 8 and 24-bit image processing software system incorporating the quickest image rendering and conversion technology currently available on the Amiga. *Contact ASDG, Inc. 925 Stewart Street, Madison, Wisconsin 53713, (608) 273-6585. Inquiry #232.*

Digital Creations: DCTV (Digital Composite Television) is Digital Creations' new display and digitizing system for the Amiga. Using a new video compression system, DCTV takes the digital video signal from the Amiga RGB port and converts it into full color composite video, the end result being picture quality equal to that of broadcast TV. *Contact Digital Creations, 2865 Sunrise Boulevard, Suite 103, Rancho Cordova, CA 95742, (916) 344-4825. Inquiry #233.*

Dr. T's Music Software: Previously available from Intelligent Music, **"M"**, the interactive composing and performing program, will now be offered by Dr. T's. *Contact Dr. T's Music Software, 220 Boylston Street, Chestnut Hill, MA 02167, (617) 244-6954. Inquiry #234.*

Electronic Zoo: The Zoo is now featuring its first two exhibits, **William Tell**, a role-playing adventure game set in medieval Switzerland, and **Treasure Trap**, an underwater strategy/action game set 50 fathoms below. *Contact Electronic Zoo, 3431-A Benson Ave., Baltimore, Maryland 21227 (301) 646-5031. Inquiry #235*

Expert Services: Gregory Tibbs' much talked about **A1000 Rejuvenator** Expansion Board is now being distributed through Expert Services. *Contact Expert Services, 5912 Centennial Circle, Florence, KY 41042, (606) 371-9690. Inquiry #236*

Gold Disk: Showmaker is the name of a soon-to-be-released package from Gold Disk. A multi-media presentation generator, Showmaker will basically allow even the rankest video enthusiast to build continuous, self-running presentations that may incorporate internal or externally produced text, images, computer graphics, animation, music, video and audio. *Contact Gold Disk, 2535 W. 237th St., Suite 106, Torrance, CA 90505, (416) 828-0913. Inquiry #237.*

Great Valley Products: GVP is now offering a **33 Mhz version** of their **Impact A3001 Upgrade Kit**. *Contact Great Valley Products, 225 Plank Ave., Paoli, PA 19301, (215) 889-9411. Inquiry #238.*

ICD, Inc.: A new entry into the Amiga market, ICD is offering a number of RAM expansion devices including the **AdRAM 500 Series**, and the **AdRAM 2000 Series**. ICD is also offering the **Advantage 2000**, a lightning-fast host adapter for the A2000 or A2500. *Contact ICD, Inc., 1220 Rock Street, Rockford, IL 61101, (815) 968-2228. Inquiry #239.*

Impulse: From the folks who brought you Turbo Silver comes **Imagine**, a complete professional 3D object creation, animation, and rendering software package. Imagine will be made available May 31, 1990. *Contact Impulse Inc., 6870 Shingle Creek Parkway #112, Minneapolis, Minnesota 55430, (800) 328-0184. Inquiry #240.*

Progressive Peripherals & Software: Soon to be released by PP&S is **3-D Professional**, a new 3D graphics tool which supports overscan and all resolutions including HAM. *Contact Progressive Peripherals & Software, 464 Kalamath, Denver, CO 80204, (303) 825-4144. Inquiry #241.*

•AC•

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speed by eliminating the need for programmers to write their own functions. How many library functions does Megamax offer? Lattice offers an excellent debugger, CodePRobe, to speed debugging. What is the Megamax debugger like? Lattice includes many file management and maintenance utilities that speed one's programming. What additional tools does Megamax offer? Finally, Lattice offers unlimited, free technical support and a free 24-hour electronic bulletin board loaded with technical support from Lattice developers and other experienced users. What good is it to save a few fractions of a second in compilation times if, when you have a technical support question, it takes hours or days for the company to get your problems solved?

Regarding Mr. Belding's other comments:

1. Lattice has given high priority to providing an integrated "front-end" to the compiler. The next release will have a graphical user interface which makes it easier to use the compiler and many of the tools.

2. For many writers and programmers, the feelings they have for their word processor or text editor often approaches a religion—there is only one true way, and all others are worthless. For this reason, The Lattice C Compiler accepts code written by any ASCII compiler. Many programmers like the editor and use it exclusively. Other programmers use another editor with which they are more familiar. Mr. Belding is free to use any editor of his choice.

Before Mr. Belding becomes discouraged with the Lattice product and encourages Megamax to begin a port of their product, I would suggest that he call Lattice (although some competition again might be fun). I see from his registration that Mr. Belding does not have the most current version of our compiler, and he is entitled to an upgrade free of charge (any registered user of Version 5.0 may obtain Version 5.0S at no charge by calling Lattice Customer Service at 708-916-1600).

Mr. Belding may also call our bulletin board or our technical support hotline. With all the compiler options, I am sure that someone can help him get more speed out of the compiler by helping him set his configuration files or by selection of a different set of command line options.

Finally, we always appreciate it when our users give us suggestions of how to make our products more beneficial to them. We always try to incorporate user suggestions into later versions and appreciate their input to help us provide a superior product.

Sincerely,
John E. Nelson
Communications Coordinator
Lattice, Incorporated

Dear AC:

In the February 1990 Issue, Terry L. Sassaman from Reading, PA asked about a printer driver for a Gemini 10x printer. At that time you directed him to a Fred Fish disk containing a PD Printer Driver. However, a much better printer driver comes with AmigaDOS 1.3. The driver is EPSONXOLD. The 1.3 enhancer Documentation on page 4-8 states "Drives all very old EpsonX MicronicsGemini 10-X". The only problem I have with it is that my Star can't handle some of the density settings (I am currently using setting 3). Also beware that if you install the driver on a disk that is not 1.3 then you will also need to move the DEVS:PRINTER.DEVICE file to that disk as well. This driver works 3 million times better than ANY of the PD drivers I have ever been able to get my hands on.

Sincerely,
Ronn F. Black
Laurinburg, NC

Dear AC:

I am writing with an appeal to your readers. I am currently researching material for a book which will highlight the role of the Amiga in Desktop Presentations. In particular, I am looking for stories featuring real people, doing real work on a regular basis with an Amiga computer that could conceivably fit the bill of "multimedia" or "hypermedia" productions. If you are interested in being featured in this book as an Amiga "success story" or "simply want to lend me a hand with technical info" (software/hardware used, techniques, etc.) please drop me a line.

David Johnson
9102 A Wyoming St.
WAFB, MI 48753
517-739-9819 evenings

Dear AC:

I have been reading your magazine for about a year now. It's in *Amazing Computing* that I have discovered the world of "Fractals". I had never read or heard anything about fractals before. But now, because of you and Paul Castonguay's well documented articles and programs, I now have a genuine interest in them. Just "Amazing" those fractals.

Regards,
Claude Bonhomme
Ville d'Anjou, Que.

(All letters are subject to editing. Questions or comments should be sent to:
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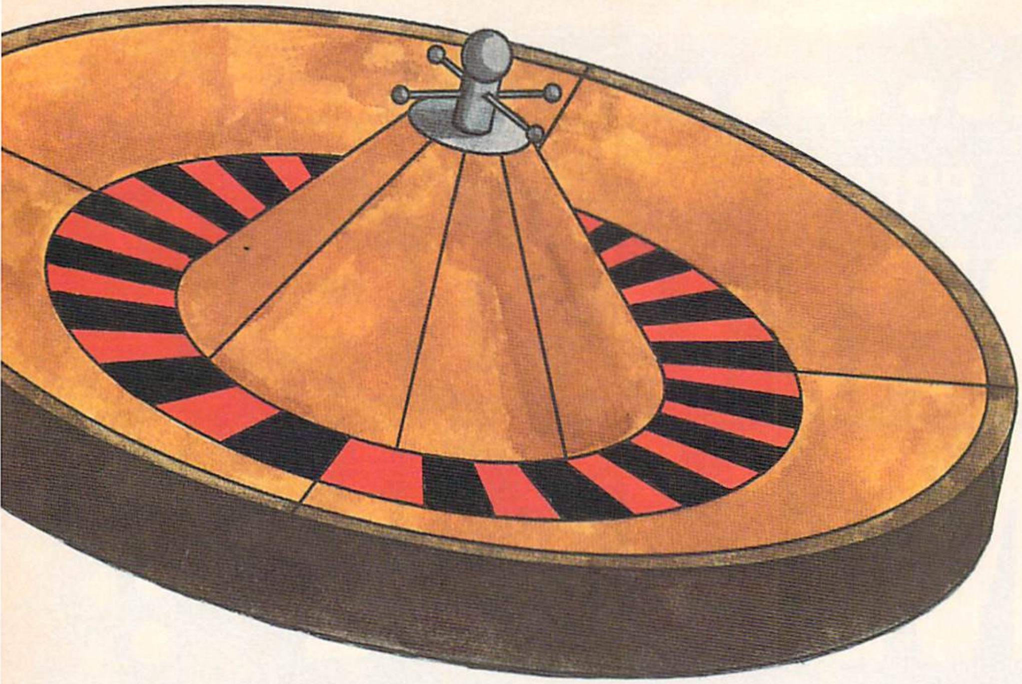


by Oran Sands 3.0

Gambling with your video, Amiga-style

I call it "genlock roulette". You know what I mean. You loan your genlock to a friend, and later he tells you that the output looked terrible. It looks fine when you use it, so what's the deal?

Well, it is not just your buddy's imagination, nor is it yours. There really is a problem when trading genlocks, and that is the topic of this article.

While testing genlocks for *Amazing*, I have noticed that some genlocks were drastically out of adjustment, or so it seemed. While some were dead on the nose, others were way off. Since there is not a lot that can be done to screw things up (if a genlock has been designed carefully), I decided to look into this situation.

A genlock receives very few signals from the Amiga; mainly it *sends* signals in order to do its job. The only signals it receives (that could make a difference in the picture) are the red, green, and blue analog signals that would normally go to your monitor. The intensity of these signals determines the intensity of the Amiga graphics, whether using a genlock or not. All the other signals control the synchronization of the Amiga and the genlock, but they do not affect the picture itself.

Commodore is quite fond of stating that their Amiga line has standard NTSC video output, but in reality that has not been the case since the introduction of the A1000 (which had a NTSC color composite video jack). The A500 and 2000 have NTSC monochrome video outputs which are fairly worthless to about 90% of us who own Amigas. (Kinda like desktop video for the '50s — what a concept!) The real value of the Amiga in video is that its graphics chips are clocked at rates that are even multiples of TV sync, ensuring that video output that is compatible with NTSC video as the rest of the non-Amiga world knows and understands it can be derived.

The RGB analog signals are always touted as being "industry standard" and most of us have naively assumed that this was true. The industry standard for non-composite analog video is .7 Volts peak-to-peak (at full intensity) when terminated into 75 ohms. The A1000 RGB signals were actually .67-.69, so we were pretty close. We all assumed that this was also the case for the entire Amiga line.

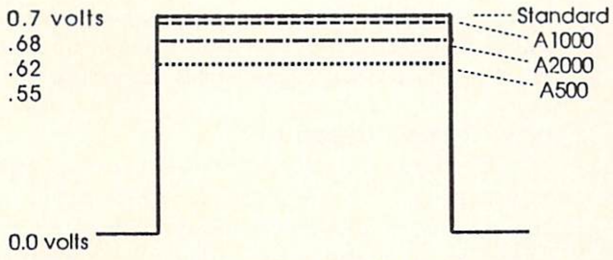
YOU KNOW WHAT HAPPENS WHEN YOU ASSUME

Unfortunately this is not the case, and tests have confirmed it. The A500 and 2000 do not meet the specs and indeed fall quite short of them. What does this mean? It means that if their output is lower than the 1000, then at full intensity their graphics will be less intense or dimmer.

The actual test results are as follows:

Standard	.7 vpp
A1000	.67-.69 vpp
A2000	.60-.63 vpp
A500	.53-.55 vpp

See Figure One for a comparison. (All voltages measured with a 75 ohm termination. Note the variation from machine to machine—even within the same model.)



Non-composite video signal
(one horizontal line)
FIGURE ONE

You can see that the 500's video is about 20% lower than the 1000's. Even the 2000's output is lower than it ought to be. While this is not what the specs call for, it can be dealt with by anyone engineering a device to work with any of these computers. And that's just the problem.

Most genlocks were designed to work with the A1000. Resistor values were set so that the genlocks' signal would create a correct level of intensity as needed. So you could say that these genlocks expect a .67 vpp signal to operate correctly. Any more signal or any less would create the wrong picture levels.

Hook up one of these genlocks to a 500 though and, even with your graphics at full intensity, the output of the genlock can be incorrect. It can be as much as 20% less than the same picture output through the same genlock and an A1000. This is why trading genlocks becomes a bad idea.

If you adjust a genlock to deliver the correct levels when using a 500, you have the opposite problem. When using it with an Amiga that has higher RGB signals (such as the 1000 or 2000), your video will be too "hot".

While the problem may be with the computer system, it will appear to be a problem with your genlock. Loaning out or borrowing any video gear to use with an Amiga is playing "genlock roulette". Will you or won't you get proper Amiga video?

So now you need to figure out whether your genlock is set up for your computer or someone else's. How do you tell? If you have a room full of waveform monitors and vectorscopes, it's no problem. Since that is not too likely, you are somewhat out of luck. If you need to know which computer your genlock was aligned for, call the manufacturer and ask.

The Magni 4004, SuperGen 2000S, and the Amiga 2300 are not involved since they will only work with the 2000, and it's not likely they'll be used anywhere else.

THE CAUSE

What causes this problem? The Amiga A1000 used discreet components to convert the digital RGB signals to RGB analog signals. While not terribly sophisticated, it worked, and the levels were pretty close to the standard. When the 500 was designed, the idea was to make the computer cheaper. In doing so, Commodore designed a new chip which would perform the D-to-A conversion for the RGB channels (the Amigas have an analog RGB output) and also create the monochrome video output. The A1000 needed over 20 parts to do this; with this new chip, it was only 1 — much cheaper. Unfortunately, it seems that in the process, we lost our color output and also better RGB levels.

This chip that is used in the 500 is also used in the 2000. So why are the levels different? You got me! After comparing the schematics and finding the designs identical, I still have no firm answer.

POWER PROBLEMS

The D-to-A conversion must have a stable, regulated source of power since all conversions of the digital signals to analog need a reference point. In both the 2000 and the 500, the power for the "hybrid" chip (as it is known) comes from the system's power supply. The only regulation is that of the power supply itself. In the 2000 you will find a heavy-duty power supply with multiple outputs — some powering the computer and others powering external devices.

In the 500, you will find an external power supply rated at the minimum it takes to run the computer. Hook up anything else, and it starts to breathe hard. Even a heavy-duty power supply from an after-market firm does not help much. Since we need 5.0 Volts to power and reference the chip, the power must be at that level, nothing else. The after-market power supplies I have tested usually put out a nicely regulated 4.90 Volts or so. It is enough to run the computer, but the hybrid chip's reference is too low. So despite using the same chip as the 2000, the 500 output is even lower.

ANOTHER POWER PROBLEM

The Amigas have another power problem that affects the hybrid chip. The problem is evident in all Amigas, but more pronounced in the 500. Every time there is a heavy draw upon the power supply, the voltages tend to drop, which also causes the video level to drop. I have seen a brightness level change of 5% on a waveform monitor due to this.

The types of current draw that will cause this are, for the most part, floppy and hard drives running. If you were taping a presentation that loaded pictures from a drive, you would find yourself with a picture that has varying brightness levels during the loads. The answer to this problem is simple. Don't use the disk drives during taping! And remember that merely popping a disk in a floppy drive will cause the Amiga to "read" that disk for a second or so.

MONITOR ROULETTE

If you remember our industry spec for a non-composite analog video signal, we said it was measured with a 75 ohm termination. That means the signal is grounded through a 75 ohm resistance (see Figure Two). Some genlocks go ahead and terminate the signal, and then buffer it in order to pass it on to your Amiga monitor. Other genlocks merely "tap" the RGB signals while they are routed on to the monitor, assuming that the monitor will terminate the signals correctly. And this is where the second hitch is.

Standard television monitors do indeed use a 75 ohm termination. But most computer monitors do not. In fact there is no real "standard" termination resistance for computer monitors. The following table shows how the Amiga monitors stack up.

1080	90 ohms
1084	100 ohms (early "square" models)
1084	150 ohms (later "1080" style)
2002	120 ohms

As you can see, none of these give you a consistent termination. A signal that is .7 Volts pp into a 75 ohm term will be greater into a 90 ohm term, greater yet into a 120 ohm term, and even larger into a 150 ohm load. Hellllllp!

What does this mean? Only that we now have yet another variable which will cause you headaches when trading genlocks. We now have 3 different Amigas, genlocks tuned for 3 different machines, and 4 different monitors as well. That gives us 36 different combinations to try. What a mess!

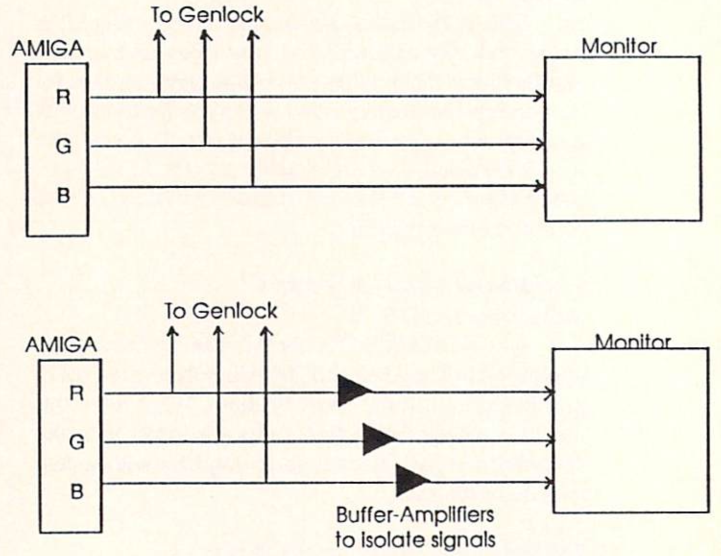


FIGURE TWO

Can these problems be cured? Sure, if you're willing to adjust your genlock to match your particular computer/monitor setup. The easier approach (for those still at the pre-buying stage) is to make sure you buy a genlock for your model of Amiga, or at least decide to be satisfied with whatever mismatch you have. Many of the possible combinations will give you a signal that is rather close to spec.

DON'T WORRY, BE HAPPY?

If you are only fooling around at home, making titles for your garden club's next meeting, or even producing a quick training program for your boss, you shouldn't be too concerned. This problem only affects the overall color saturation and picture brightness, but not the hues (tint). If your audience does not know what the video should look like, they may not know that it is off. If, on the other hand, these things DO mean a lot to you (i.e., you make your living doing this stuff), then find an adjustable genlock and get it tweaked for your system.

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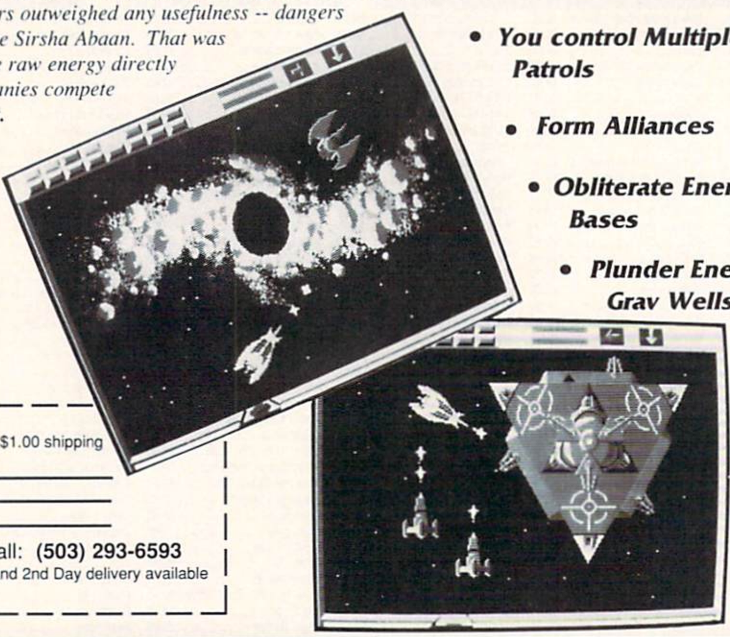

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CONCLUSIONS

The real upshot of all of this is that you can't trust a genlock review unless you know which machine it was set up for and which monitor it was tested with. When looking at published pictures of test results on waveform monitors and vectorscopes, know that the results you see may not be the same with your machine. Unless the article tells you which machine was used, take the results with a grain of salt. All of my tests prior to this year have been made with an A1000. Since then, all of my testing has been done on all three models. In my tests, the A1000 has consistently been a more stable machine when it comes to the power regulation which affects the output.

The lesson to be learned in all of this is to match your genlock to your computer. Hopefully, you can find someone with a waveform monitor and a vectorscope to adjust it (if necessary). Remember too, that any device designed to use your analog RGB output will be subject to this problem. This includes, but is not limited to, genlocks, video projectors, video output adapters, and external video encoders.

I don't envy anyone trying to make a genlock or video device for the Amiga. Designing one is tough enough as it is without theses variables thrown in. But just in case anyone wants to know, I do have an idea for a way to solve the problem.

You could simply include a switch that would allow the choice of machine to use it with. Or, you could simply install an automatic "white balance" switch. Simply display a full intensity white picture on the computer and press a button. The genlock would then amplify or reduce the RGB signals until they are at the right value for that genlock. It's a more expensive approach, but it would be the perfect answer.

It's not all wine and roses when it comes to using the Amiga with video, but with a little knowledge and planning you can make whatever decisions are needed and be able to rest easy. When in doubt about your computer/genlock combination call the manufacturer for more info. Several of the manufacturers of adjustable genlocks have been very supportive, and very free with helpful information (when asked). For the most part I don't recommend asking your dealer. That's not meant to be negative toward the dealers, it's just doubtful whether they will even be aware of the problem. Frankly, I don't envy the manufacturers or the dealers. They're all just trying to make a living—but the rules of the game seem to keep changing.

My last recommendation is this: if you're serious about your Amiga and your video, then see what you can do about measuring the output yourself and aligning the genlock for your system. If you can't do that, try calling the manufacturer and ask their advice about getting it tweaked. DON'T PANIC THOUGH! It's not the end of the world. Your video won't deteriorate just because you read this article. It'll still be as good as it was yesterday, and if that was good enough then, you're still OK. If that wasn't good enough, then maybe this information will help you figure out how to make it better. Above all, don't blame the genlock manufacturers. The ball is in their court, but they didn't create the problem.

•AC•

You may write to Oran Sands in care of Amazing Computing, P.O. Box 869, Fall River, MA 02722.

New Products and Other Neat Stuff

by Elizabeth G. Fedorzyn

Word processing with punch

This month, New Horizons Software will introduce a major upgrade to ProWrite, their popular multi-font, graphic word processor. **ProWrite 3.0**'s *very* intuitive interface, true WYSIWYG display, and lightning-fast speed are just a few of the enticing features in this sure-to-be powerful word-processing package.

The latest version will feature multiple-column support with the option of parallel or snaking text flow, a thesaurus with over 300,000 cross references, an ARexx port, macros, print merge, and headers & footers. ProWrite's 100,000-word dictionary will allow users to check their spelling as they type or all at once.

The program will also provide control over nearly all aspects of printing, including dot density, aspect ratio, and paper size. And printer-resident fonts of Pica, Elite, Condensed, and Wide may be printed on the same page with one pass. Any IFF or HAM pictures may be imported, with text wrap around pictures provided.

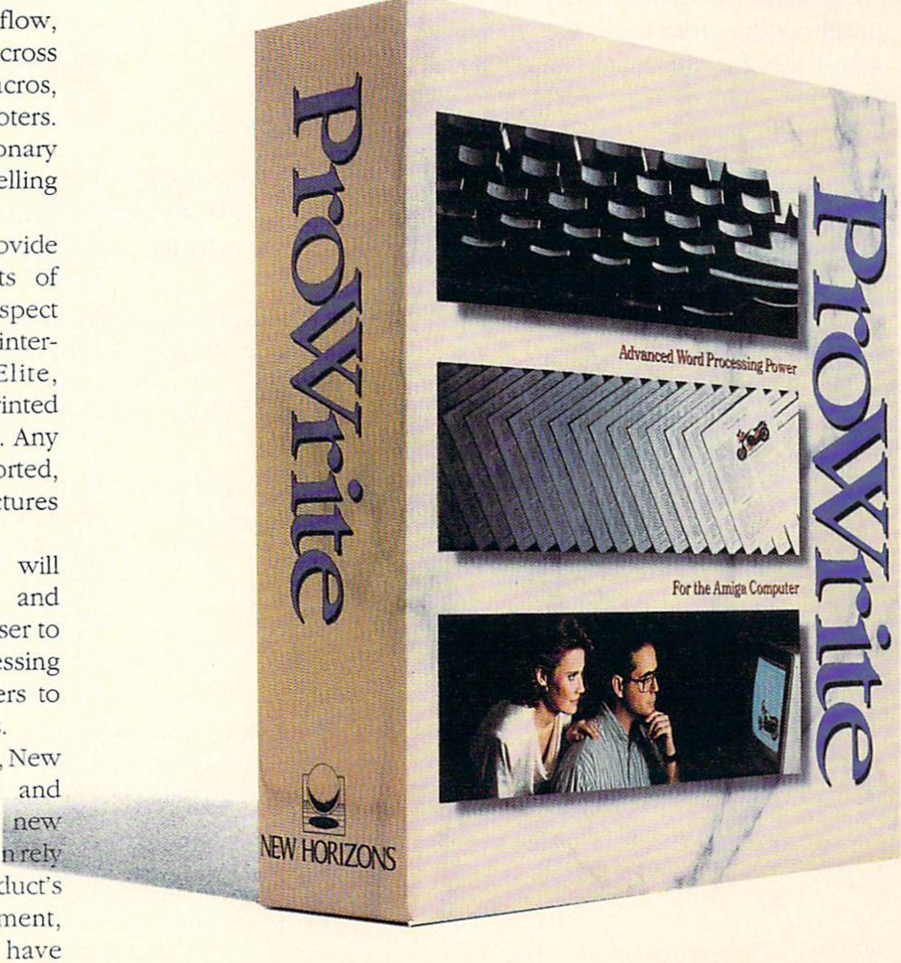
Combined these features will form a altogether powerful and flexible tool that will allow the user to accomplish a slew of word processing possibilities, from business letters to newsletters to video storyboards.

According to Brian Sarrazin, New Horizons Vice-President, Sales and Marketing, ProWrite 3.0 "sets a new standard as a writing tool users can rely on". In regards to the product's customer-influenced development, Sarrazin commented, "We have developed ProWrite based on user requests. ProWrite has evolved from user needs into a program with an intuitive interface and some very powerful capabilities but that still keeps up with even the speediest of typists."

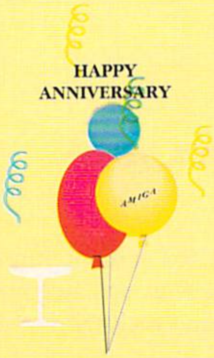
The package will also feature the Bug-Free Guarantee begun by New Horizons in the Fall of '89. ProWrite 3.0 is not copy-protested and will run on all Amiga systems with one megabyte of RAM or more, and Kickstart version 1.2 or later.

ProWrite 3.0
New Horizons Software
P.O. Box 43167
Austin, TX 78745
(512) 328-6650
Price: $175.00
Inquiry #216

(continued)



ANNIVERSARY SPECIAL



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AC has always paid Fred Fish a royalty on all disks sales to encourage the leading Amiga program anthologist to continue his good work.

Down to London

Hold on to the hospitality of humdrum existence. Now available from Electronic Arts, **The Hound Of Shadow** is an adventure/mystery game that places you in 1920's London, taking you beneath the "civilized" surface of the city to the unspeakable horrors that lie beneath the city streets.

Inspired by the fictional works of H.P. Lovecraft, The Hound of Shadow is firmly in line with the recurring theme of Lovecraft's endeavors—that the only thing that keeps people from going insane is the fact that they are unaware of the horrors lurking behind the thin mask of everyday reality.

Designed by Eldritch Games Limited, The Hound of Shadow features a new role-playing system called Timeline whereby you create a Timeline character, choosing the character's sex, nationality, one of nine professions ranging from Aristocrat to Psychic Investigator (no steel workers here), and an assortment of skills from over fifty possibilities. As you work your way through the mystery/adventure, your character's attributes will affect the game's events, not to mention play a key role in your ability to discover and survive the strange and horrific London underworld.

The Hound of Shadow is not copy-protected and requires a minimum 512K memory.

The Hound Of Shadow
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
Price: $39.95
Inquiry #217

One of these programs is doing their own thing...

Now available from Computer Sight is **One-to-One match**, a talking educational game aimed at children ages 4 through 14. Designed on the Amiga by Dr. Penny Norman, the program features a subtle combination of play and learning, challenging the user to "flip" over and match illustrated cards from a variety of different categories including numbers, shapes, musical notes, geography, nature, the universe, and prehistoric life.

No reading or typing skills are required for the game. And all objects are named as the cards are flipped over. Each category features three levels of difficulty, with simple concepts being presented on 20 large cards, and more sophisticated concepts being presented on 30 and 42-card layouts.

One-to-One match is copy-protected and requires a minimum 512K memory.

One-to-One match
Computer Sight
4522 Santa Rita Road
El Sobrante, CA 94803
(415) 222-2638
Price: $39.95
Inquiry #218

Special on fish

Seven Seas Software, publishers of the popular **Doug's Math Aquarium** and **Doug's Color Commander** has announced a special offer available to Amiga User Groups.

Now through May 1, 1990 Amiga User Groups may purchase Doug's Math Aquarium and Doug's Color Commander at a savings of more than 50% off the retail price. The discounted prices are $39.95 for the Math Aquarium, $13.95 for the Color Commander, or $49.95 for a set containing both packages. User Groups may contact the folks at Seven Seas for an order form.

Seven Seas Software
P.O. Box 1451
Port Townsend, WA 98360
(206) 385-1956
Inquiry #222

Back in time

It's 2059 A.D. The world has come under control of a new international ruling force, the United Earth. The greatest achievement of mankind in the 21st century is time travel. Of course with this new technology comes new complications—namely, the past must be protected by those who will unscrupulously attempt to exploit the past for purposes of gains in the future.

(continued)

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For this reason, an elite organization of scientists (or "Historians") called the United Earth Historical Division has been formed.

Such is the setting for Aurum Software's **Adventures Through Time, Vol. I: The Scavenger Hunt**, a role-playing text/graphic adventure which places you in the role of Douglas "Buck" Walker, Jr., son of the well-respected Historian Dr. Douglas Theodore Walker, Sr.

While being the son of such a prominent 21st century citizen may have its perks, you cannot deny that you've tired of the constant references and comparisons made to dear ol' dad. So you're a bit of a loner. However, you do have three very close friends (presumably fellow United Earth brats), and together you have formed a secret club.

Now the four of you have agreed to play a game that will take place on the day of the 17th Annual Historical Convention. The game will revolve around a scavenger hunt. But there is, of course, a twist. All the objects to be located are in the past. So now you must basically steal the keys to dad's time machine, figure out how to operate it, then go back in time and be the first to locate five artifacts from civilizationns long-gone. But be careful, as perplexing puzzles and life-threatening perils await you, not to mention the possibility of stalling in the 70's pantsuit era.

The Scavenger Hunt package requires a minimum 512K memory and comes with manual, United Earth Historian's Handbook, and a United Earth emblem and time machine operator's license to get you into all the best clubs.

Adventures Through Time,
Vol.I: The Scavenger Hunt
Aurum Software
P.O. Box 5392
Ventura, CA 93003
(805) 659-3570
Price: $49.95
Inquiry #220

•AC•

OTHER PRODUCTS RECEIVED

Artura
Virgin Mastertronic, Inc.
18001 Cowan, Suites A&B
Irvine, CA 92714
(714) 833-8710
Price: $39.99
Inquiry #223

Dragon Scape
Free Spirit Software
P.O. Box 128
58 Noble Street
Kutztown, PA 19530
(215) 683-5609
Price: $39.95
Inquiry #227

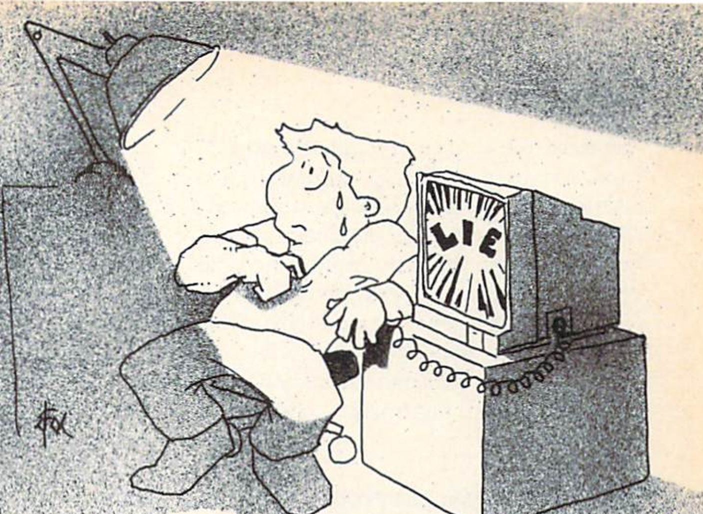
Hermes IconLab 1.3
Elkon Enterprises
4654 Mistletoe
Wichita Falls, TX 76310
Price: $35.00
Inquiry #231

Magic Johnson's Basketball
Virgin Mastertronic, Inc.
18001 Cowan, Suites A&B
Irvine, CA 92714
(714) 833-8710
Price: $49.99
Inquiry #208

Rick Davis' World Trophy Soccer
Virgin Mastertronic, Inc.
18001 Cowan, Suites A&B
Irvine, CA 92714
(714) 833-8710
512K: $39.99; 1 meg: $49.99
Inquiry #209

Scene Generator 2.04
Natural Graphics
P.O. Box 1963
Rocklin, CA 95677
(916) 624-1436
Price: $39.95
Inquiry #224

WWF MicroLeague Wrestling
2201 Drummond Plaza
Newark, Delaware 19711-5711
(302) 368-9990
Price: $39.95
Inquiry #225



Bio-feedback/ Lie Detector Device

by John Iovine

Bio-feedback devices are devices used to train people to control an aspect of their autonomic physiology. In other words—body functions controlled by the lower brain and not under our conscious control. This belief is outdated, having proved to be somewhat of a fallacy. Training a person to control such autonomic physiology as EEG (brain waves), EKG (heart rate), blood pressure, body temperature and GSR (galvanic skin resistance) proved to be possible once a method became established of showing a person (feedback) the physiology changes that they are trying to control in real time.

It is interesting—or maybe obvious—that learning to control these functions cannot be accurately taught verbally. The training of a person using a bio-feedback device helps condition the body to feel a particular way or to get a feeling that controls these autonomic functions.

The types of bio-feedback devices available today are numerous. The type that we will build in this article is a galvanic skin resistance bio-feedback device. Galvanic skin resistance is a good indicator of the stress level in a subject. But perhaps its most famous attribute is its use as a lie detector. Therefore, our bio-feedback device can be used for stress reduction, or as a lie detector. The skin's resistance and its relationship to stress is simple. As a person's stress or tension level increases, the body's resistance decreases. When a person relaxes or tension level reduces, the body's resistance increases.

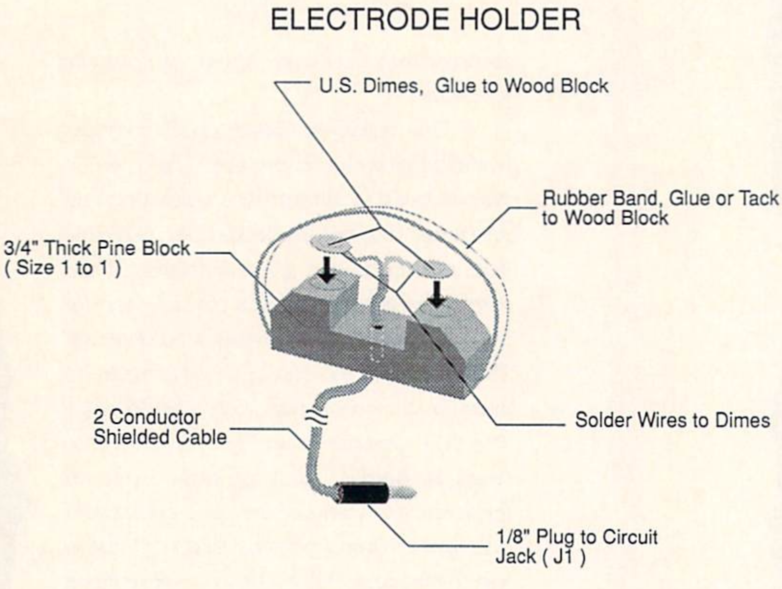
HISTORY

The roots of the GSR go back over a hundred years. In 1888 a scientist named Fere made the first GSR meter. He attached an electrode to each forearm of a subject, and passed a small DC current source through the subject and a galvanometer. The needle of the galvanometer would swing upscale when the subject became emotionally aroused. Many people believe that the GSR effect is caused by sweat glands and the amount of perspiration, and this may play a small part. But experiments have shown that this doesn't appear to be the answer.

CIRCUITRY DESCRIPTION

To simplify circuit analysis the circuit should be looked at in two sections. The front end consists of the operational amplifier (abbreviated op-amp) and the resistance bridge. This is the actual bio-feedback circuit. For those of us who are less familiar with electronics, an op-amp is a high performance amplifier with a tremendous variety of applications. Typically most op-amps require a dual polarity power supply, but the op-amp we are using doesn't. The back end of the circuit, the TLC 548 IC and the DB 25 male plug to the Amiga parallel port, is identical to last month's circuit. Essentially, we are only changing the front end of the circuit.

ELECTRODE HOLDER


U.S. Dimes, Glue to Wood Block
Rubber Band, Glue or Tack to Wood Block
3/4" Thick Pine Block (Size 1 to 1)
2 Conductor Shielded Cable
Solder Wires to Dimes
1/8" Plug to Circuit Jack (J1)

BIO-FEEDBACK SECTION

As stated, the advantage of this galvanic resistance device is that the op-amp we are using requires a single ended +6 volt power supply, in contrast to the standard op-amps that require a bi-polar power supply. This simplifies our circuit's op-amps power requirements. However, an additional 1.5 V AA battery is required to supply power to the resistance bridge. Looking at the schematic, the resistance bridge consists of the electrodes (plugged into jack J1), 1.5 V battery (B1), 68K ohm fixed resistor (R1) and 100 K ohm pot (R2). When the electrodes are attached to the subject, the subject's resistance becomes part of the bridge. The bridges can be balanced using the 100 K pot. The output from the bridge is fed to the input of the op-amp. When the subject's skin resistance changes, the op-amp will amplify any minor change in the subject's resistance.

The output of the op-amp is directed to the input of the TLC 548 chip. The TLC 548 chip reads the analog voltage outputted from the op-amp and converts it into a digital number equivalent. This number is serially transmitted into the Amiga serial register on the parallel port and displayed by the program.

ELECTRODES

Silver is one of the best electrode materials around, so we will use two U.S. dimes for our electrodes. The cable we will use is a 2 conductor with shielding. The shielding is a copper braided wire that surrounds two insulated wires in the center of the cable. Remove about 2 inches of the outer cable jacket, and separate the shielding from the insulated wires. Strip 1/2 inch of insulation off the center wires.

Soldering the wires to the dimes is a little tricky if you haven't done much soldering. Place the tip of your soldering iron on the coin, and keep it there till the coin becomes hot enough to melt solder on it. This takes about 1 minute of continuous heating. At this point melt a small puddle of solder on the coin, then place the bare end of one of the insulated wires into the puddle and remove the soldering iron from the coin. Keep the wire in place until the solder solidifies. Repeat the procedure for the other coin, but solder the shielding along with the wire to this coin. This will be the ground electrode.

The palm of the hand is very sensitive to galvanic changes: it is therefore the area of choice. To secure the dime electrodes to the palm of the hand I made a small palm fitting electrode holder out of 3/4 inch pine wood. You only need a couple of square inches and practically any piece of scrap can be used (see drawing). After cutting the wood to the proper shape, drill a 1/4 inch hole through the center as shown to feed the cable through. Then glue, epoxy or hot glue the electrodes to the wood block as shown. To finish off the hand electrode attach a rubber band or elastic material to the base so that it covers the electrodes. This material is what will secure the holder to your hand. To the other end of the cable attach the 1/8 inch plug Radio Shack # 274-286.

CIRCUIT CONSTRUCTION

The circuit is fairly simple. Point to point wiring is sufficient. There are two programs that accompany this article. The first program reads the Binary Number from The TLC 548 chip and displays it center screen. The second program performs a linear graph. When the graph reaches the end of the screen it clears the screen and restarts. To test the circuit you must have some resistance connected across the electrodes or you will constantly read "255" from the device. To test, attach a temporary 50K to 100K fixed resistor between the electrodes (you can use jumper/test cables RS# 278-1156). Turn on the device first, then start the program. (You can use a person to test the device, it's a little more difficult to see circuit operation.) Adjust the balance pot to give a mid-screen trace if you are using program 2 (or a display number of about 125 if you are using program 1). Now pinch both sides of the fixed resistor with the thumb and forefinger of each hand. This should cause the reading to jump upscale. What is happening is that when you grasp the resistor you are effectively reducing the resistance, which causes the reading to jump upscale. If your device jumps down scale instead, this means the polarity of the 1.5 V battery in the bridge section is reversed. After the device checks out properly, remove the temporary resistor.

CIRCUIT OPERATION

Using Program One, attach the electrodes to your subject's hand by placing the wood electrode holder in their palm and the rubber band around their hand. Turn on the circuit, start the program, then adjust the balance pot so that the number you're reading is about mid-scale, app. 125. You will notice that when adjusting the balance pot the numbers jump very quickly when you reach the balance area. A soft touch is required in rotating the pot around this area. If your subject is a little nervous you may have to adjust the balance a few times as they relax. When everything is stable, have the subject quickly inhale and exhale deeply. This should cause a momentary rise in the numbers that gradually returns to the previous level. If you get this result the circuit is operating properly and you're ready to go. If you get the opposite reaction, i.e., the numbers dip, the battery in the bridge section is reversed.

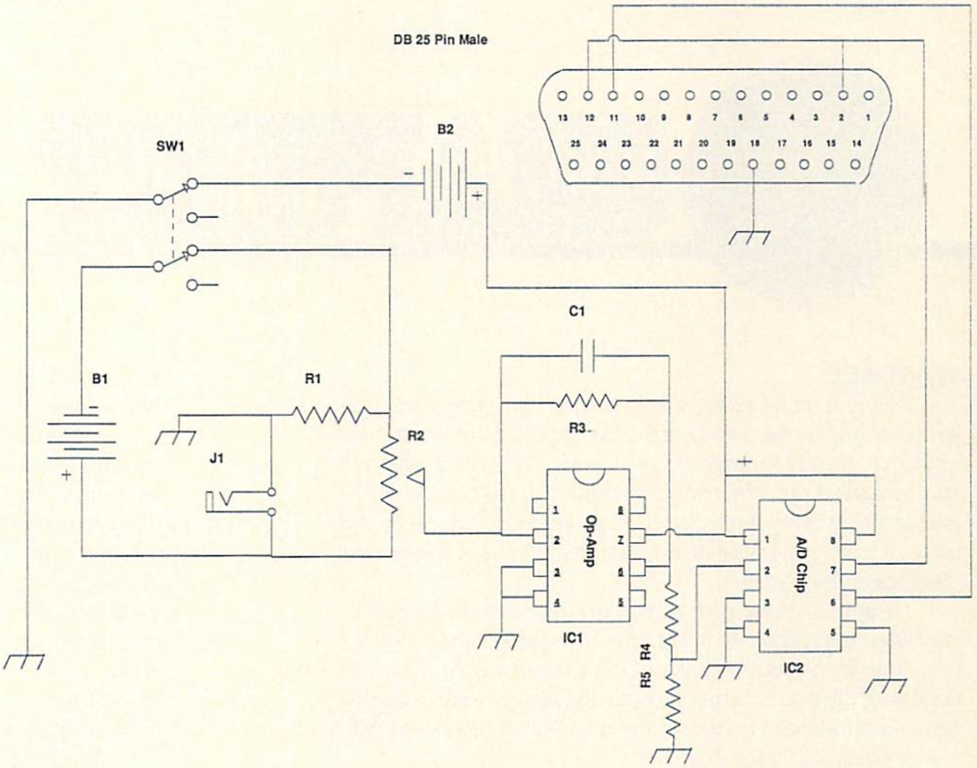
TROUBLESHOOTING

The circuit is sensitive to how the program is stopped and restarted. If you stop the program in the middle of a conversion—say, where 3 bits of a number have been transmitted into the serial register—and then restart the program, the last 5 bits of the number are still in the TLC548 register. The program, however, starts from the beginning. What you have in this case is out-of-sequence numbers being transmitted into the port, the results of which are numbers jumping all over the place.

This is easy to fix: first stop the program. Then, turn the bio-feedback device off (this clears the TLC548 register), then turn the circuit back on. Run the program. This problem is fixed in the software by allowing the program to stop with a keyboard input only after a number has been transmitted completely. Of course, this solution is predicated on the condition you stop the program with a keyboard input, which isn't guaranteed. That is why the above troubleshooting information is included.

BIO-FEEDBACK

To use this device in a bio-feedback mode for relaxation and tension reduction, set the balance pot to graph the line in the upper portion of the screen. As you relax and reduce tension, the body's resistance will increase and will be seen as a gradual downward sloping of the graph. When you reach the bottom of the screen, you can readjust the balance pot to bring it back up and then try to bring it down again. By doing so you will continue to reduce your stress level to its lowest possible level.



LIE DETECTOR

To use this device as a lie detector set the graph on the lower portion of the screen. Stress causes a decrease in the body resistance, which will cause the graph to rise. There is a delay between question and response of approximate 1.5 seconds. Remember, this device is for entertainment purposes only. Even full-fledged lie detectors are fallible, and it could be the nature of the question, regardless of the answer, that can cause a stress reaction. When you use this device with a number of people you will notice some people have a higher resistance than others. This is sometimes referred to as the BLC (Base Line Conductance). It is also an indicator of the state of arousal (tension). Remember, high tension and stress decreases the body's resistance.

PARTS LIST

IC1	Cmos OP-Amp	Images Company
IC2	CMOS Op-Amp	“
R1	68 K resistor	Radio Shack
R2	100 K pot	“
R3	2.2 Meg resistor	“
R4, R5	2.2 K ohm resistors	“
C1	.1uf cap.	“
SW1	DPDT switch	“
2	U.S. Dimes	

Misc—6V (4 AA battery holder) and 1.5V (1 AA battery holder, 2-cond cable, 1/8" plug and jack. All misc items available at Radio Shack.

Images Company
P.O. Box 313
Jamaica, NY 11419

TLC 548	cost $ 12.00
Op-amp	cost $ 3.50
shipping & handling	$2.50

•AC•

by R. Bradley Andrews

SNAPSHOT

SPACE ACE

Several years back, many people thought video disk games would be the new rage that would drive the arcade field into even greater success. Unfortunately, their sharp graphics and increased play time were not sufficient to overcome the problems involved with the disk players and the increased price of each playing session (50 cents instead of the normal 25 cents at that time).

In spite of these problems, a few games were extremely well done and achieved fairly wide recognition, most notably two done by popular animator Don Bluth. Dragon's Lair was the first of the two to be released for the Amiga. More recently, ReadySoft followed up their conversion of Dragon's Lair with a conversion of Space Ace.

When I first heard they were doing an Amiga version of Space Ace, I was extremely interested. This was the first, and only, video disk game I had ever played.

"Ace, Earth's greatest hero, is being attacked by the evil Commander Borf. Borf has just kidnapped the beautiful Kimberly, and is plotting to take over the planet Earth with the help of his dreaded weapon—the Infanto Ray. Only you can guide Ace through treacherous battles to destroy the Infanto Ray, save Earth and rescue Kimberly. Be valiant, space warrior—the fate of Earth is in your hands!" As you can see from this plot summary (quoted from the box), the game is a true tongue-in-cheek contest to save Earth once again.

Play begins with Ace (otherwise known as Dexter) and Kimberly on an asteroid just outside Borf's spaceship. They have recently been zapped by the Infanto Ray and are younger versions of themselves. Kimberly slips and falls into Borf's hands. Ace must then dodge hostile fire, make his way to Borf's ship and, finally, come face to face with the Commander and defeat this evil fiend.

The joystick is used for all control during the game, which is fairly limited. Dexter must move in certain directions, or occasionally fire his gun in order to overcome the obstacles before him. If he chooses the wrong action, or tries to do something when he should just remain still, he will face a nasty death and lose one of his valuable lives.

The graphics are the most outstanding part of the game. They are up to Amiga standards and seem very similar to what I remember from the original arcade machine. All on-screen actions are smoothly animated and are enjoyable to watch, even those that result in Dexter's death.

Unfortunately, the game is far from perfect. Part of its problem is being too faithful to the original. It can be extremely difficult to learn the proper actions to make it through some of the scenes. The second scene serves as a good example. Since I can never figure out exactly what I did to get through this area, each encounter with it is largely one of chance. Some video disk games tell you what action you should have taken when you did something wrong. This might have helped here, though it might have made the game even shorter, which is the other problem.

While Dragon's Lair came on six disks, Space Ace only uses four disks, with the inherent limitation on the amount of action and animation the designers were able to include. While the manual lists 33 different scenes, many of these are small pieces of other segments and the game really only includes about twelve different areas of action. It may take a while to learn the moves for each scene, but once this is done, a complete playing of the game will not take more than five minutes.

I understand the difficulty of putting all the information from the original into the Amiga version; twelve disks might not have been sufficient to do the game in all its detail. This is the difficulty with doing video disk game translations. Perhaps someday when CD players become widespread for computers we will see a complete computer version of the game. Until then, it is hard to justify paying the game's premium price for such a short play time. In spite of this, the game's graphics and animation almost make up for this shortfall and still make it worth considering, especially if you can get it at a discount.

JOAN OF ARC, SIEGE AND THE SWORD

From the far future, we now go back to the past. Joan of Arc, Siege and the Sword, is set in the world of 15th century France. The player takes the role of the young Dauphin, Charles VII. The year is 1429 and his homeland is torn by internal and external strife. Not only have English invaders taken over much of the land, many renegade Frenchmen have actually joined them in their destructive task.

Starting with only a small army under the command of the brilliant Joan of Arc, Charles must first battle his way to Reims, where he will be officially crowned King of France. Only then can Charles collect taxes, raise armies, negotiate for towns and prisoners, dispatch spies, and dispense royal justice—all of which will be required to unify the country and purge it of all renegade elements.

Play centers around the map screen, which displays all the French provinces. This map can be cycled to show three varying views. Clicking on one of the provinces in the first view will display the cities and fortresses in that province and their owners, as well as the strength of any of your forces there. The second variation will show the current weather conditions around the country, while the third will present the rebellion rating of all provinces that are completely under the king's control.

The current month and year is shown along the top and several icons are used to access the game actions listed above. In addition, disk icons in the bottom left allow you to save and restore games, provided a formatted disk is available.

Gameplay itself is basically just a series of arcade sequences strung together by the other options, which seems to be a popular technique with designers these days. Five basic arcade sequences will be encountered during play. Fighting another army features a side view combat screen, with controls to move your forces along the bottom. While your troops will automatically fight upon contact with the enemy, long range fire is controlled solely by the icons along the bottom of the screen.

Storming a castle brings up two more sequences. First, you must hack your way across the entrance bridge to the castle. Enemy soldiers come out one at a time if you are far enough from the main gate, and arrows are continually fired from above, in a somewhat random pattern along the path. After this it is on to the "donjon" wall, where you must quickly scale the ladders there, blocking falling rocks with your shield and dodging streams of oil.

A fourth sequence is the reverse of the last one. In this segment, you are defending the castle from the top of the wall and must drop rocks and oil on the scaling warriors. If you knock enough of them off, the invaders are defeated. Rocks only knock a single man off, while oil will remove any climbers in its path. Since the supply of rocks is unlimited, they are used to repel most invaders. The final sequence pits you against a single cavalier in one-on-one mounted combat. If you do not unseat the cavalier first, you will lose the respect of your troops and some will probably desert.

Interspersed throughout the game are many informative messages of historical occurrences, such as the establishing of the Golden Order of the Fleece. Additionally, Joan herself will be "captured" by your enemies at the proper moment in history, so plan for it. Other still scenes, with the appropriate textual explanation, are used to explain your personal achievements, such as being crowned king, or conquering all of France.

The graphics in Joan are good. The full-screen backdrops have been drawn with care and the on-screen animated characters move smoothly. Some of the graphics are a bit bloody, such as when a head is chopped off during combat. The sound is also nice, with an attractive stereo sequence in most places. But as with most soundtracks, it can become annoying after a while. Either the mouse, joystick, or arrow keys can be used to control game action, and each is better for different parts of the game.

The game is a bit limited, though. A complete game will only run around 6 hours if you are successful (especially if you use the Save and Restore option). The arcade sequences occupy most of the play time (except for the disk access delays). Because of this, the game can become boring after a bit of play. Storming the 30th castle is not any different than the first. But finally bringing all of France under the king's control can be rewarding.

ReadySoft's Space Ace

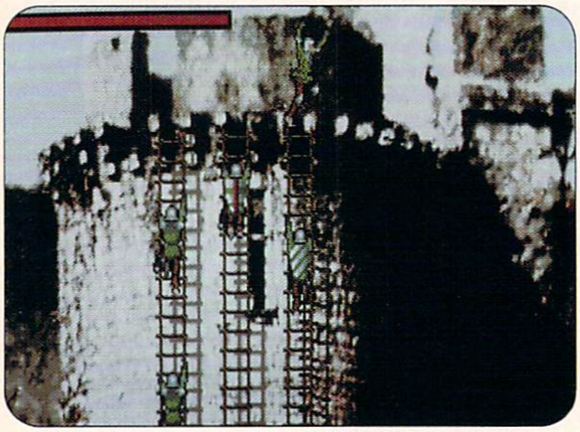
If you enjoy games that use arcade sequences to connect the main action, you should enjoy Joan of Arc. If you prefer a completely strategic game, you may want to look elsewhere.

CLOWN O' MANIA

Remember Bentley Bear? He was the main character in Crystal Castles (a coin-op game), and it was his task to gather up all kinds of gems just lying about an evil person's castle.

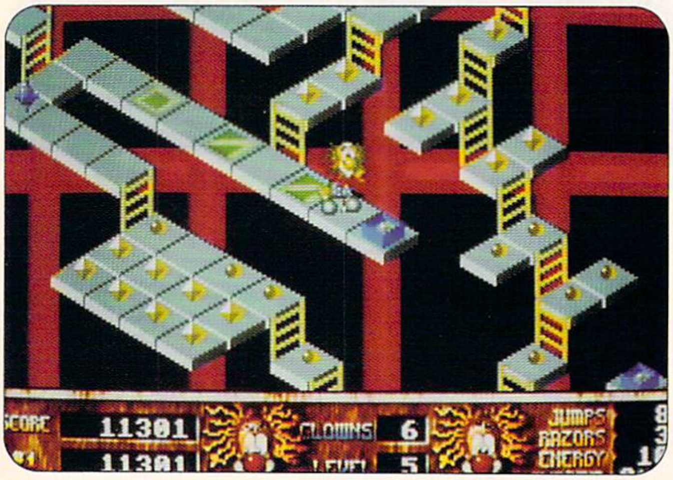
Well it seems he had a brother, or maybe a cousin, Beppo the Clown. Clown O' Mania is a recent release from Starbyte that takes many of the ideas begun in Crystal Castles even further.

It seems that one night, after putting on his popular act in the circus, Beppo stumbled across a secret map that showed the way to a land full of valuable crystals. Unfortunately, many areas of this land are guarded by nasty creatures who can end Beppo's quest with a mere touch. But then there's no such thing as a free lunch, right?


Broderbund's Joan of Arc

In case it wasn't obvious by now, your task in Clown O' Mania is to guide Beppo through 70 different levels, gathering all the jewels you can find. Many hazards are along the way. Some are static, such as holes full of acid, while others are the previously mentioned nasties who will follow various paths, trying to do Beppo in. Several items are useful to Beppo. A miniature clown's head provides an extra life, while Razors and Jumps can be collected to kill or avoid enemies later on. Two different kinds of pyramids can also be moved around if Beppo has enough energy. One will kill any nasty it comes in contact with, while the other will simply block the path for all but our beloved clown.

Starbyte's Clown O' Mania



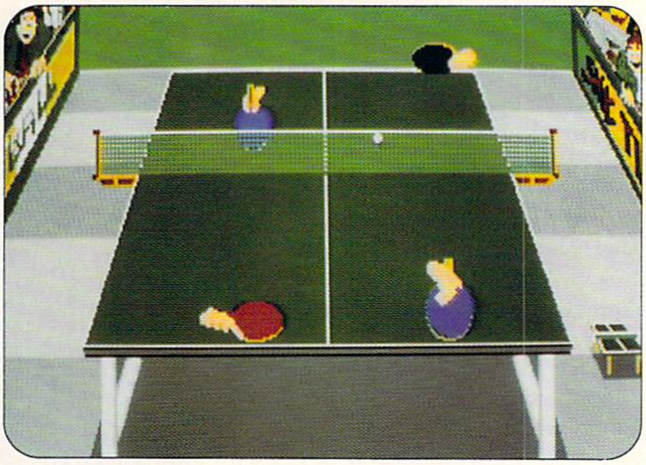
The graphics in Clown O' Mania are very well done. They are up to arcade action standards and have a cartoony flair to them appropriate to the game's background. Stereo sound is used throughout and even the soundtrack varies enough to make it bearable after repeated play. In fact, the game could probably make it by itself in the arcades. One cute effect is when the whole screen "shakes" after Beppo's last life is lost. I'm not sure how they did it, but it looks really nice. I recommend the game to all arcade action fans.

TABLE TENNIS SIMULATION

Next on the list this month is another offering from Starbyte. Table Tennis Simulation is, that I know of, the first of its kind. Yes, there have been tennis simulators. Even Pong used a tennis theme. But this is a real computer adaptation of the game of table tennis, complete with two or four players, the table, and the paddles.

Three different playing areas are available. The training area contains the training robot which will simply launch balls to you, so you can practice your returns. But most of your learning time will be spent in the Single Game area. Here you can play a single match against one of the twenty computer opponents. Each opponent has his own style and will provide a different challenge.

The final challenge is the World Cup Tournament. Here up to 32 players (20 of which can be computer-controlled) will compete in a knockout system in a quest for the world championship. While it is basically just a series of interconnected single matches, the tournament adds something to gameplay and it will be a while before even the most experienced player can make the rise to the top.


Starbyte's Table Tennis

Games can feature either one-on-one competition or two-on-two competition. Up to two human players can compete in any positions in the various games. In addition to the expected head-to-head play this provides, two players can also cooperate against a computer team.

Six different types of paddles are available for use during play. Each hits the ball in a slightly different way and is appropriate for a different playing style. Either the joystick or the mouse can be used for control of the action, though the joystick is a little easier, though possibly less challenging.

A three-dimensional view of the play area is used for the graphical display and the images are nicely drawn, though nothing to get excited about. With a single human player, or two humans on one side, the view is always just over the player's shoulder. But if two human players are going head-to-head, each takes a turn playing from the back court.

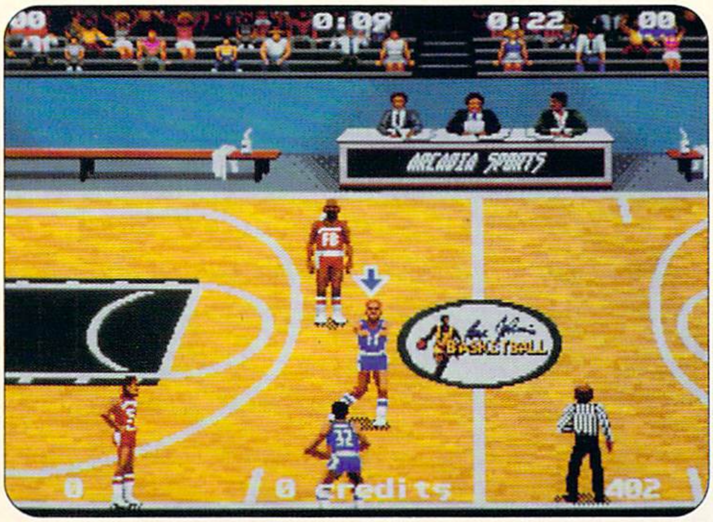
The manual is fairly brief and could use a bit more explanation of the proper play techniques, but the mechanics are not that difficult to learn. It did take me a while to figure out how to properly hit the ball on the serve though, and a practice serving area would have been useful.

The game is OK, neither good nor bad. If the subject interests you, it's worth checking out.

MAGIC JOHNSON'S BASKETBALL AND RICK DAVIS' WORLD TROPHY SOCCER

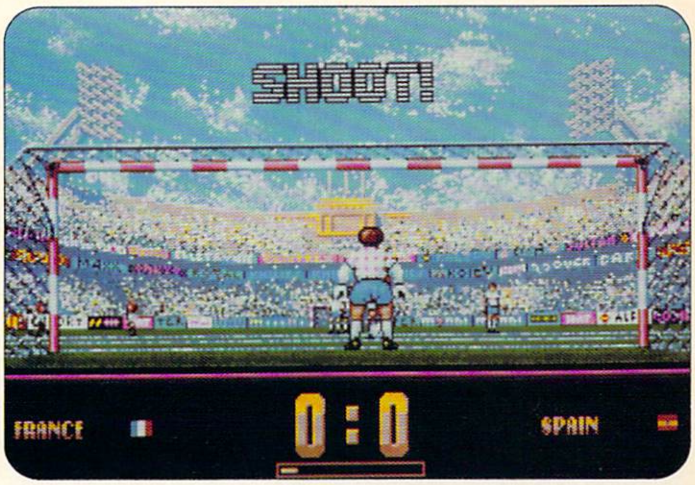
Finally, I want to take a quick look at two recent releases from Melbourne House. Magic Johnson's Basketball and Rick Davis' World Trophy Soccer are both Amiga versions of the arcade games of the same names. While each is about a different sport, they are very similar and share many of the same good and bad points.

Magic Johnson's Basketball is billed as "Basketball the way the Pros play". It features two-on-two competition with referees to keep the action legal. It uses a perspective view from up in the stands and a full-court scrolling screen. The free throw view lets you look directly out of the shooter's eyes, with part of the basketball being transparent so you can see the backboard.



Magic Johnson's B-ball from Melbourne House

Rick Davis' Soccer likewise covers the sport of soccer, this time with full-size teams on a full-size soccer field. The graphics are a bit less detailed (the grass is a fairly uniform green) and the perspective is from a bit higher in the air. All aspects of soccer, such as Free Kicks, Goal Kicks, Corner Kicks, and Throw Ins are included, with a referee showing up in a window to control play. Kicks into the goal bring up another view where only the goalie and the shooter move around to make or block the shot.



Rick Davis' Soccer from Melbourne House

Both games are true to their arcade roots and are FAST. In fact, I wonder: if the action was this fast in the arcade versions, how could any newcomers get started on the game? (Pocketfuls of extra quarters likely came into play.) Gameplay is almost too fast and, even at the easiest levels, the computer player is much better than any novice human opponent. Play is a bit better when two players are going head-to-head, since both are just as inexperienced.

One flaw that shows up mainly in the soccer game is the stupidity of your own players. Since you can only control one player at a time, you would think the others would be doing something reasonably intelligent. Instead, most of your team will virtually stand around watching as play passes them by. Since the computer can seemingly control all of its players at once, you are placed at a severe disadvantage.

The arcade versions were supposedly based on an Amiga board, so the conversion process was not that hard and the graphics do seem up to arcade standards. While the sound effects are quite adequate, the background noise (supposedly the crowd) is boring and could have used a little more pizzazz.

These are two very fast-paced action games. The graphics and action are up to Amiga standards, but the gameplay itself is a little too fast for beginners and keeps it from making the recommended list. •AC•

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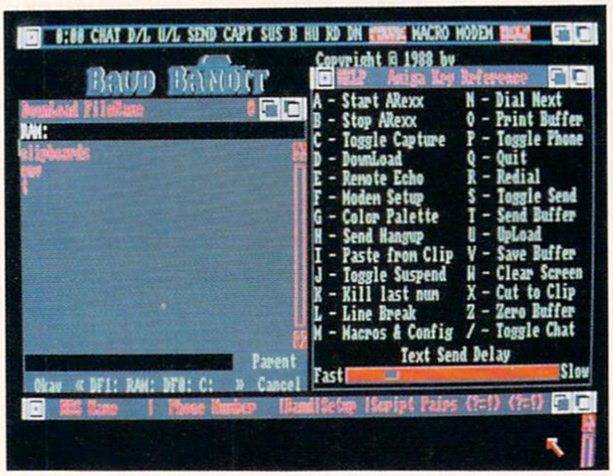
Inquiry #209

review by Cletus Baker

Baud Bandit *steals the show!*

I think I've tried just about every freely distributable terminal program for the Amiga that has come down the pike, along with a couple of the more expensive commercial versions. I have switched time and time again in search of the "perfect" terminal, and while I got closer and closer with each new release, there was always something significantly wrong with each one. I finally settled, nearly a year ago, on the freely distributable GT Term by Greg Cunningham. This was one of the first terminals that had the right "feel" under my fingers. It responded quickly and efficiently to my bidding, had the relatively fast XModem-1k file transfer protocol (sometimes misnamed YModem), and contained many of the other features I needed or desired for my type of telecommunications usage.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Text Send Delay
Fast
Slow
BBS Name | Phone Number |Baud|Setup |Script Pairs {?=!} {?=!}

```
A - Start ARexx        N - Dial Next
B - Stop ARexx         O - Print Buffer
C - Toggle Capture     P - Toggle Phone
D - DownLoad           Q - Quit
E - Remote Echo        R - Redial
F - Modem Setup        S - Toggle Send
G - Color Palette      T - Send Buffer
H - Send Hangup        U - UpLoad
I - Paste from Clip    V - Save Buffer
J - Toggle Suspend     W - Clear Screen
K - Kill last num      X - Cut to Clip
L - Line Break         Z - Zero Buffer
M - Macros & Config    / - Toggle Chat
```

The Bandit's DownLoad File window and Help window.

It didn't have everything, of course. The big drawback with GT was the lack of the ZModem transfer protocol. ZModem is arguably the fastest, most efficient, and foolproof protocol in use today. Oddly, few full-featured terminals have seen fit to include it. To date, only Online! (and its brethren Platinum and The Works versions), and the shareware JRComm feature ZModem. As important as a fast protocol is to me, I found more things to dislike in each of those programs than the lack of ZModem in GT. So GT and I became good friends for a comparatively long time.

Not long after its initial release, GT attracted the attention of Progressive Peripherals & Software. Greg was asked to flesh out the program for marketing by PP&S under the name, Baud Bandit. After much work, which has both solidified and enhanced the program, Baud Bandit is now available. I knew all along that I would be among the first to buy a copy, so I had high expectations going into this review. My expectations were not only met, but exceeded in nearly every way. First, let me guide you through the things I like about Baud Bandit.

IT STOLE MY HEART

One of the most striking things about Bandit is its "clean" look. Screens aren't cluttered. Everything you need is at hand, but the control surfaces are lean and spare. There are no traditional menus. Instead, across the top of the screen, a single-line "command bar" appears containing several terse abbreviations. Each one of these is actually a button for a commonly-used command: open a Chat window, download, upload, send text, open capture, suspend capture, send a break, hang up, redial, dial the next number, open the phone directory, edit function key macros and the configuration file, set modem parameters, or yell for help. These commands are executed with a single mouse click. On top of all that, the bar contains a connect timer. It's obvious why the abbreviations have to be terse.

If you prefer to eschew the mouse, each of these commands (and many others) is available from the keyboard. Should you forget the correct keystroke combination, the command bar's abbreviations are no help. However, the unabbreviated HELP button opens a small window with a listing of the 26 available commands and their associated keystrokes. Though they look innocuously enough like entries in a requester, they are actually buttons; clicking on one of the listed commands executes the command. Thus, there are three possible methods of communicating your desires to the program: directly without counting, scripts and macros (discussed later). The more, the merrier!

NOW FEATURING....

I won't go into the details of each feature, because most of them are fairly common to all terminal programs, but a few distinctions are worth noting.

Bandit's review buffer, a storage area in RAM which maintains a recent history of text that has scrolled off of the main screen, has a user-allocatable capacity. This means that if you rarely refer to it, you're not required to waste a lot of valuable memory to maintain it. The buffer is exceedingly easy to access, simply by pressing one of the cursor keys. You may scroll back and forth through the buffer via the up and down cursor. A click of the mouse on a particular line in the review buffer immediately clips and sends that line back to your host, should you wish to "quote" an earlier comment (nice touch).

That feature changes slightly in the presence of an open "chat" window (a small window that opens at the bottom of the screen to isolate outgoing text from the cacophony of incoming text in an online conference). The chat window uses the cursor keys for line editing prior to transmission, so an alternate method of opening the review buffer is necessary when chat is active. Similarly, the chat window intercepts lines selected from the review buffer for "quoting". There they may be edited before being sent on their way.

> *... I had high expectations going into this review. My expectations were not only met, but exceeded in nearly every way.*

Clipboard support is also available, as well as support for William Hawes' ARexx programming language. The integration among the components, review buffer, clipboard, chat and ARexx is as smooth as silk. Harv Laser was having a blast on PeopleLink with an ARexx routine that snagged lines clipped from the review buffer, piped them through a "Jive" translator, and then resent them, returning my twisted quotes to me faster than I could type a new line (and I'm fairly fast). That should give you an idea just how facile the program is.

Greg has offered several other "beyond the call of duty" items in Bandit: Upload and download file requesters display the currently selected file transfer protocol in a status line. This status line turns out to be yet another button gadget which cycles through the available protocols. The result? It couldn't be easier. No longer are you required to close one requester, open another, and wade through a separate, dedicated menu for protocol selection.

Opening successive capture files has been made equally painless. You can safely ignore the filename requester which appears. When the default name for the Capture file, as specified in Bandit's configuration screen, ends with a ".1" extension, Bandit will not overwrite an existing capture file of the same name, but will increment the extension to ".2", ".3", and so on with each new file. Of course, you may take the time to give them unique names if you choose.

Naturally, Bandit is fully multi-tasking. Not only that, but each requester or "pop-up" function appears in its very own window. There seems to be no limit to the number of these you may have open at the same time. For instance, you may open the Color Palette

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window and simultaneously have opened the upload file requester, the modem parameter window, and the HELP window to examine the effects of color changes on their contents. Nor do these open windows impede your online activity, which merrily putters away in the background while you diddle with the paint pot.

And finally, in the event that a host system does not feature word wrapping at the ends of lines, Bandit does. This feature may be toggled on or off.

Such carefree behavior on the part of a program goes a long way toward rendering it sailor-proof. It's clear that Bandit is capable of endearing itself to individuals with wildly differing ideas about the ideal user interface.

LET YOUR MOUSE FINGERS DO THE WALKING

One of the most important items for most users of terminal software is the phone book and dialer. There's no surprise here. The directory may be edited in your favorite text editor or from within Bandit itself. It holds, in addition to a name and a phone number, information about Baud rate, word length, parity and stop bits, full or half duplex, preferred transfer protocol, and script instructions for each listing. There is a limitation of only a thousand listings per directory, but you may have as many directories as you have space to hold them.

To help organize the number of listings, several options are provided. Dividers can be placed between sections to isolate local from long distance calls, for example, or free from pay services. These can take the form of solid bars, or they may contain highlighted text labels. To hide all those triple-X-rated graphics boards from the kids, an entire entry may be obscured from view, if desired.

The phone book may also be set to automatically pop-up whenever the program detects a DTR transition of the modem (that is to say, upon opening the program, or any time the modem hangs up – whenever you might reasonably want the phone book in front of you). That's all fine and dandy, but can it dial?

Well, dial it does. It is the best dialer I have encountered, in fact: selection of one or more lines in the phone book is done with a click or a drag of the mouse. You may then choose to begin either a single-shot dialing procedure or a round-robin queue. Each number selected is dialed in sequence until a connection is encountered. Should you be working in the background while the program is grinding away at the landlines, you'll hear a beep and Bandit will pop itself to the front screen just in time for you to settle into the log-on procedure. After logging off, dialing immediately resumes without operator intervention, picking up right where it left off. Yes, indeed. It's an excellent dialer.

AREXX AND SCRIPTS

Control of the program through scripts and keyboard macros is quite thorough. Scripts and macros both have access to the 26 commands which appear in the HELP window plus 17 additional, more specialized commands. In combination with built-in support of ARexx, you have virtually unlimited capacity for very complex scripting. Included on disk and in the manual are some examples of ARexx "scripts", including one to turn Bandit into a mini host BBS. I have not delved into ARexx, but the examples are sufficient to convince me that if you want to do it, it can be done.

If you aren't an ARexx devotee, you will have to settle for the limitation of a maximum of 255 characters for a script minus the overhead of a standard phone entry. At least I believe this to be true. That was the limitation imposed by and documented in the freely distributable pre-release versions of the program, and the basic elements of scripting appear to be unchanged in the release version. Unfortunately, the details of scripting are poorly documented in the manual. In practice, the 255-character brick wall will not be excessively limiting, but it is to be considered if you expect a script to negotiate an entire automated session for you.

SPEAKING OF DOCUMENTATION....

The manual is undoubtedly the weakest part of Bandit. It's not useless, but it leaves a lot to be desired. It's organized in groups related to the command bar functions, so that it's easy enough to find a section that refers to a particular topic. But there are some huge gaps in thoroughness of the content. As mentioned, scripting is one such example. In fact, I counted a sum total of 13 lines of text in the entire manual in reference to building a script. By contrast, the use of scroll bars in requesters garnered a total of 38 lines in three separate references. I tend to think that I'd manage to operate a scroll bar with no instructions if I had to, but I could certainly use a thorough treatment of the syntax of

(continued)

AC Disks

Source code and executable programs included for all articles printed in *Amazing Computing*.

#1 AC V3.8 and AC V3.9

Gels In MultiForth Parts I & II: Learn how to use Gels in MultiForth. Author: John Bushakra

FFP & IEEE: An Example of using FFP & IEEE math routines in Modula-2. Author: Steve Faiwiszewski

CAI: A complete Computer Aided Instruction program with editor written in AmigaBASIC. Author: Paul Castonguay

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VGad: A gadget editor that allows you to easily create gadgets. The program then generates C code that you can use in your own programs. Author: Stephen Vermeulen

MenuEd: A menu editor that allows you to easily create menus. The program then generates C code that you can use in your own programs. Author David Pehrson

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#2 AC V4.3 and AC V4.4

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Gels in Multi-Forth-Part 3: The third and final part on using Gels in Forth. Author: John Bushakra

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scripting, beyond the mere listing of available commands. Fortunately the sample phone book has several diverse examples of scripts, but you are largely on your own to figure out how and why they work as they do (or more to the point, why yours doesn't).

Just as the manual assumes that you can define the details of scripting by osmosis, it also presumes that you already know the difference between XModem, WXModem, XModem-CRC, XModem-1K, etc. I think that, given the number of elementary questions regarding protocols that I'm called upon to answer around the local user group, a basic tutorial on the subject ought to be part of any manual that accompanies a program which uses them. Similar background material should be included for such general telecommunications topics as archived files, "chopping" of executable files, etc. These are the types of questions that are universal in the minds of new users, and I see no reason to expect that Bandit will be picked up exclusively by seasoned veterans.

LASTING IMPRESSIONS

It is clear that the quality of the software redeems any failings of the manual. My ideal is a program that can be used "cold", with no reference to the manual until you get into trouble. While Baud Bandit is not 100% intuitive, it comes close. I did need to sit down and pore over the manual in its entirety to pick up a few of the slicker tricks it has up its sleeve— details I'd missed on the first go-around. It's not a trivial bit of programming, by any means.

The only people who will want to avoid Baud Bandit are those who require some form of terminal emulation; it has none. As with any terminal which uses the CON: device, it responds to about 80% of the ANSI standard, but otherwise does not attempt to be ANSI compatible.

For the rest of us, though, Bandit is terrific. It goes far beyond the "cleaned-up GT with ZModem" that I expected. And it is, in fact, the telecommunications package that I've been waiting for. I could grouse about the fact that at 70k it is nearly twice the size of GT, but it would not do any good. I'm sure there's precious little fat to be trimmed. And at 70k, it is still half the size of JRComm. PowerPacker is able to scrunch it down to around 45k. I still had to sacrifice a couple small programs on my Workbench disk to make room for it (life without a hard drive is tough!), but it's a sacrifice I made willingly.

The box claims that it will support data transfer rates up to 38,400 BPS. I haven't tried it any faster than 2400, but I have every reason to believe it would function perfectly at least as fast as 9600 BPS. Also supported, but not tested, are selected serial.device drivers for use with internal or multiple modems. Transfer protocols include XModem, XModem-1k, WXModem, YModem-Batch, YModem-G, ZModem, and Compuserve-B and -B Plus.

In addition to its superb response to the requirements of telecommunication, I have to single Bandit out for one other stellar quality: it is without a doubt the most polished "first release" I have ever had the pleasure to come across. In a market in which "beta" or "gamma" copies are routinely released to the public with the proviso that "we'll issue updates frequently for the first year or so", it's refreshing to see a release as well behaved and solid as Baud Bandit.

I have found but one "inconsistency" —I won't call it a bug ... yet—related to the screen font. On my system I have FF (the FastFonts routine from the Enhancer 1.3 package) set the system font to my favorite sans-serif. And within its configuration file is the option to set the font used by Bandit. I have prescribed the same font there. The result is that every requester, every title bar, every display within the program except the main text window uses my favorite font; the main window stubbornly clings to Topaz, which is really ugly on a 49 line interlaced screen. If I fail to set my system font with FF, leaving only the configuration file to set the font, the main text window uses my favorite, while all other displays use Topaz. It seems to be impossible to achieve my favorite font across the board.

The only other trouble the program has given me is with second-guessing the rules for script behavior, but that relates to the lack of really good documentation. This can be overcome by empirical study. And I guess I can learn to tolerate 49 point lines of Topaz. The bottom line is that I'm very happy with Baud Bandit. It's a great program and I recommend it highly.

•AC•

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DISTANT SUNS

review by Mike Hubbartt

Staring up at the sky at night, our ancestors saw wondrous sights: moving dots of light representing different objects, placed there by the mighty gods as reward or punishment for some long-forgotten (at least by mortals) deed. Both great heros and terrible villains who walked the Earth no more were sent to the heavens as patterns of stars (called constellations), so we might never forget them. Our ancestors traced these constellations on maps of the sky which helped later mapmakers, teachers, and scholars remember the positions of these stars.

While questioning the origins of those points of light in the night sky, man looked for reasons other than the ancient Gods for an explanation. Some felt that the stars determined everyone's future, and these astrologers (both past and present) read hidden messages revealed by the stars, to predict an individual's future by generating a horoscope from the position of the stars at his date and time of birth. Although horoscopes still appear in nearly every newspaper in America today, there is often little credence given to astrology, with the exception of a certain former first lady of the United States.

(continued)

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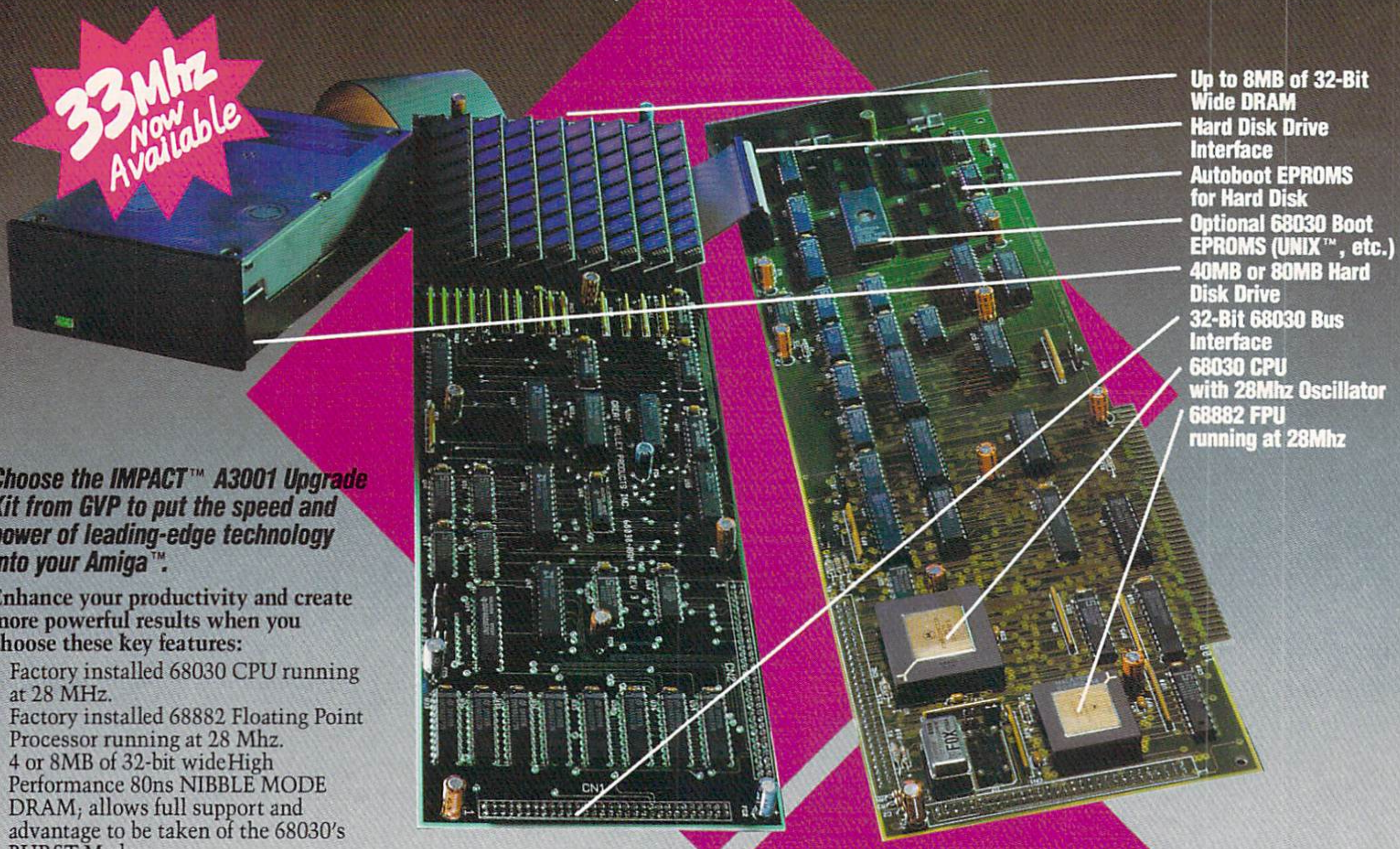
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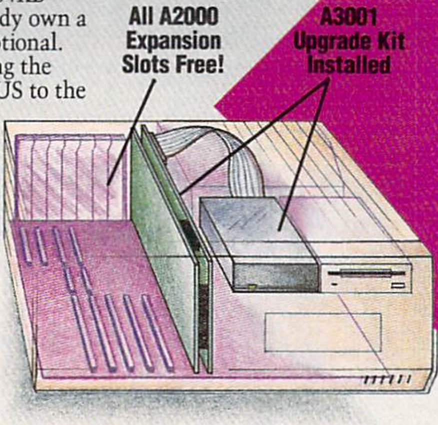
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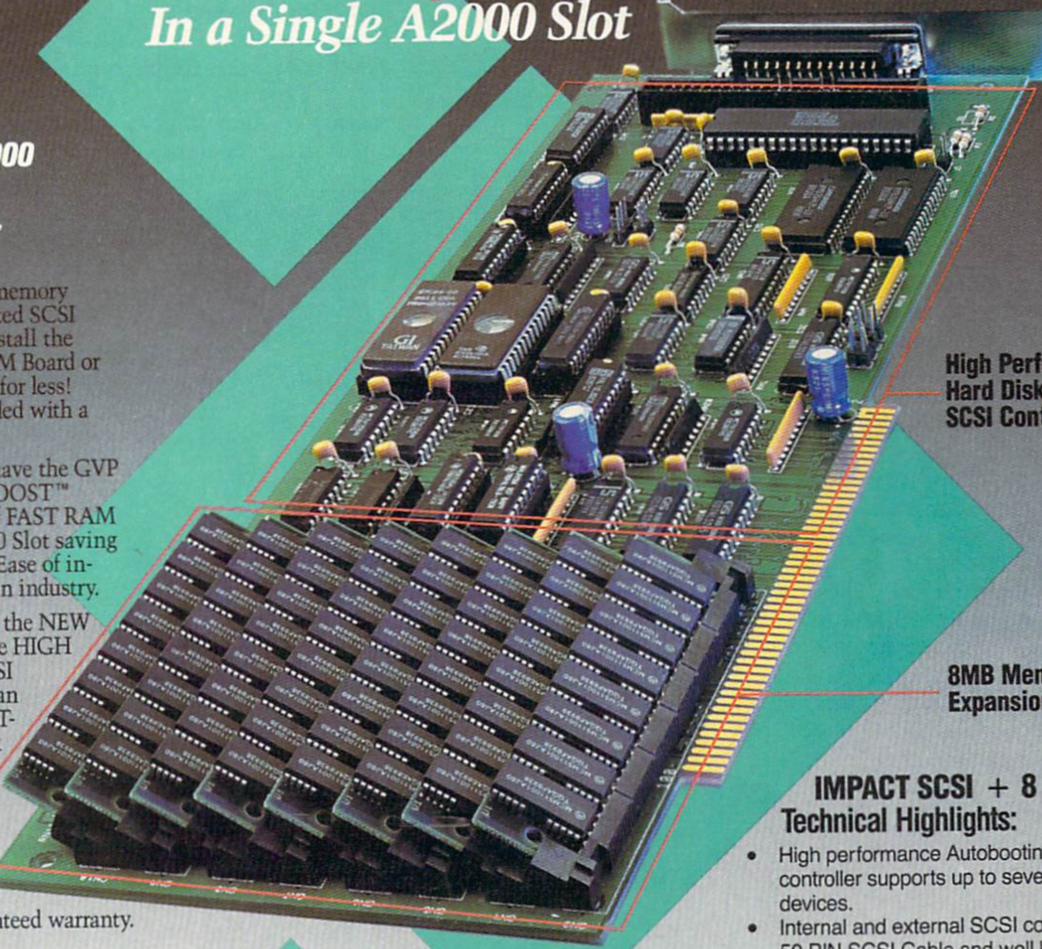

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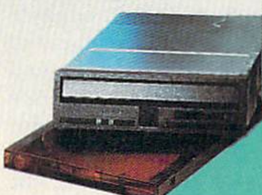

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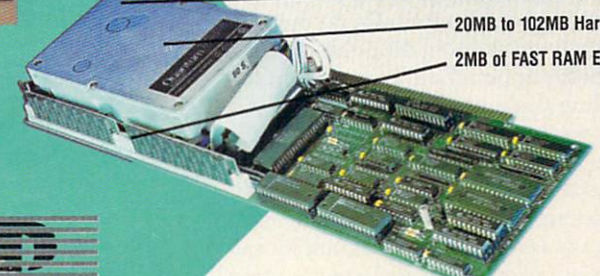

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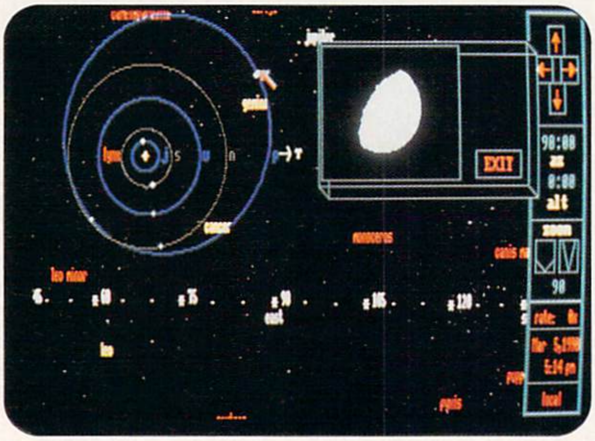
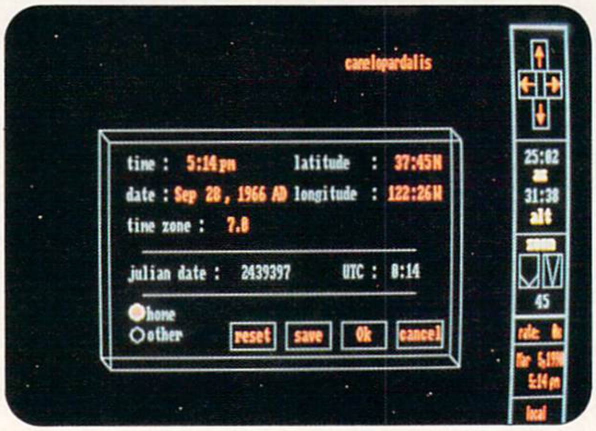
Several cultures in the past went to great lengths to study the stars. The dolmens (like ancient Stonehenge in England)—still standing from various early European communities—and Mayan temple ruins discovered just this century predict the occurrence of particular star alignments. The people that worshipped or gathered at these sites may have simply understood that stars align a certain way at different seasons, and used this information for planting and harvesting crops, or they may have used the positions of stars to signal observation of certain religious ceremonies or rites.



Distant Suns includes menu options that let you view planets through the telescope (above), or adjust variables such as latitude and longitude (below).



time : 5:14pm latitude : 37:45N
date : Sep 28, 1966 AD longitude : 122:26W
time zone : 7.0
julian date : 2439397 UTC : 0:14
● home
○ other

Now, some of our ancestors were a bit egotistical, since they felt that the stars and our sun rotated about the Earth. Talk about a self-centered view of life! Certain farsighted early astronomers, like Galileo, used scientific methods for studying the stars, but were threatened with torture or death by religious groups for going against these archaic views and proposing heretical statements contrary to the Church's beliefs. Even evidence gathered by a new device for viewing distant objects (called a telescope) did not change the minds of these opinionated people. Galileo, one of our great early astronomers, spent his last eight years under house arrest for his views about the Earth and sky.

Scientific breakthroughs since the 17th Century have led to a better understanding of the sky's objects by our scientists. The invention of the telescope pushed our vision out to the universe (no pun intended!), far beyond the bounds of naked vision and thought. Many new astronomers explored the universe for a long time with only the telescope, drawing star constellations by hand on paper so others could see and compare notes about their observations. Later, photography added a new dimension by enabling those not hardy enough to stay up the long late hours of night to see a more accurate rendition of the beauty awaiting them in space.

Modern computers provide valuable assistance to astronomers, since complex calculations are necessary to determine orbits, distances, and positions to other planets and stars in and out of our solar system. The positioning of large telescopes is computer-controlled for maximum accuracy. This is necessary since many astronomers focus on stars for long periods of time, where movement by our planet and/or the observed body will remove the star from the observation area of a telescope before all needed data is gathered. Computers control the flight of our space probes and also enhance the pictures sent back to us by them. Recent products of this include Voyager 2's beautiful shots of Neptune taken during the flyby last year. If you saw the pictures of Neptune in an astronomy magazine, like *Astronomy* or *Sky and Telescope*, you saw the sharp color and resolution, sent as computer data over many miles and translated into pictures by NASA's computers.

The final advance this century towards exploring the wonders of the sky will occur when NASA launches the Hubble Orbiting Telescope. Without an atmosphere to detract from the quality of the photographs, this satellite will bring to earth pictures displaying the splendor of the known universe, answering many questions raised over the centuries of star gazing by professionals and amateurs alike. Long awaited and long delayed, the Hubble Telescope may let us see to the calculated ends of the universe!

Where does this article on astronomy lead for Amiga owners? What better home computer to explore the skies than the Amiga? The Fred Fish collection of disks contains two different astronomy programs, but what about commercial programs? Virtual Reality Laboratories distributes a program called Distant Suns , which is a superb Amiga astronomy program for exploring the wonders of space with your favorite computer from the comfortable interior of home. WARNING: use of Distant Suns may result in financial and emotional turmoil—astronomy makes a nice second hobby, but it can place a considerable dent in your wallet if you start buying extra astronomy tools like a high-quality telescope, and it might also compete heavily (with your Amiga) for spare time better spent with a spouse or girlfriend to insure your domestic tranquility! Let's see what Virtual Reality brought us Amigoids with a hankering for the stars.

Distant Suns runs on a 512k Amiga, using software overlays to reduce memory demands. This program contains enough information to require a 1 meg machine, but author Mike Smithwick wrote the code with all Amiga users (excepting those with a 256k A1000, sorry) in mind. This program displays the stars from 9999 B.C to 9999 A.D. , from any location on Earth entered by the area coordinates found in Appendix E of the manual, which contains 6 pages of time zone/area coordinates for major cities of the world.

A central control panel displayed on the right side of the screen and optionally turned on or off contains the controls and information about the sky you see. Use the panel arrow keys to change the sky's view north, south, east, or west. Right Ascension (RA – measured in hours, minutes, and seconds in the format of hhmmss) is considered sky longitude, and Declination (Dec—measured as +/- 90 degrees) is considered the sky latitude; both RA and Dec are displayed on the control panel, for a location directly in the center of the screen. The Zoom control/indicator adjusts the field of view for sky display of 15 to 180 degrees. The field of view is the amount of sky you see at once, and it should be noted that some telescopes (and binoculars) have a wide angle of view for those interested in seeing sections of the sky instead of observing only one object at a time. This panel also displays the internal clock rate versus that of the real world, the current date and time, and the current mode (local, landscape, flashcard, or planetarium).

MENUS

Like any good Amiga product, Distant Suns uses menu items for selecting among the different available program options. The four menu categories are System, Display, Extras, and More Extras. We'll look at each menu list separately.

SYSTEM

The System menu items are concerned with basic settings. Turn on or off the control panel or title bar here, or check your free memory without opening another window or exiting the program. Quickview changes settings to local display mode, displaying both constellation and planetary names, oriented towards N, S, E, W, NE, NW, SE, SW, or UP. When using various options, some of the main screen is overwritten and may occasionally need redrawing to view it as you did previously; use Redraw to accomplish this whenever needed. The Settings menu item allows changing/setting your location, date and time, and time rate. Use the Quit item when you are ready to leave Distant Suns.

DISPLAY

The Display menu has quite a few different items to select. The window display mode is set from here, choosing between flashcard, local, and planetarium modes. Flashcard turns off identifiers and position markers, Local displays the sky using the supplied time and location, and Planetarium shows the sky without the Earth shown above or below on the screen. The constellations' names and outlines (including those of the 12 Zodiac signs) are turned on or off here, and deep sky items like galaxies (not old cars!) and star clusters are labeled according to either Messier or NGC listing names.

Set the field of vision (FOV) from 15 to 180 degrees. Point and click (very Amiga-like, eh?) on a star for further information, including distance, star class, and Messier and/or NGC designation. Turn on an artificial horizon, for a better perspective, providing hills in the distance. Display either the inner 4 (Mercury, Venus, Earth, and Mars), middle 3 (Earth, Mars, and Jupiter), or outer 5 (Jupiter, Saturn, Uranus, Neptune, and Pluto) planets in their orbits on top of whatever screen you currently view, but not all 9 planets at the same time, since the screen is renewed after each selection of inner, middle, or outer planets. This is one thing I would like the people at Virtual Reality Laboratories to change about Distant Suns. I would like to see a display of all nine planets at the same time in orbit at different speeds around the sun, even though Distant Suns does show 3 to 5 planets for each mode, moving through their orbits.

Set screen markers for Ecliptic, Celestial Equator, Horizontal Line, Local Altitude, and RA/Dec. Turn on the names for the planets and the brightest stars, and search for stars or planets by name, even using wildcards in names where you are unsure of the spelling! Set the limit for the magnitude (brightness) of stars for Distant Suns to display, and even generate the ambient lights normally encountered while viewing the sky in a city at night. I like having all these choices!

EXTRAS

This extras menu has a few choice goodies that help you appreciate the Amiga when used in astronomy. Let's say you like the view of the sky from Distant Suns and want to use it when viewing stars with your telescope out in the wilderness, but family members object to your removing the household's only Amiga from its hallowed spot at home. Just save your screen shots as IFF files for incorporation into most paint programs and print them out.

Show the star magnitude either by relative brightness or by color coding the stars. Adjust the display to account for star movement and have a cross hair pinpointing the center of the screen. Have all point and click identifying information sent to the printer or the screen and change the size of the sun and moon (to account for different changes in the FOV). Increase the brightness of the screen objects to account for a brightly lit room, dim the screen object, or show all screen objects in red shades (red does not affect night vision, which takes a full 30 minutes of darkness for your eyes to make the adjustment).

MORE EXTRAS

Have you ever seen any of the science magazines that show the night sky, with streaks of light in circular patterns through it? We of Earth are constantly moving, in orbit around the sun, even though we do not feel any sensations of movement. The stars also move through the sky, and this plus our own movement causes the streaking of stars in any long exposure photos taken of stars. Why use long exposure photos that will show this problem? Dimmer stars are difficult to study; if a camera leaves the lens open longer (from a minute to several hours), it captures more light and will have better resolution than one with less exposure time. Having the telescope move with a small motor while the lens is open will eliminate these streaks. Using cold film or film treated with certain gases also helps improve photographic resolution of dim stars. Distant Suns has a menu item that shows these star trails, so you can duplicate the effect previously only seen in magazines.

With a program like this, you may wonder why they didn't include a telescope. Believe it or not, they did. Yes, a telescope to bring closer images of the moon and all the planets, although not stars nor deep sky objects. Telescope opens a separate window that will display the moon or planets whenever the mouse pointer moves over them on the displayed screen. I would like this option better if it included the deep sky objects (even just the Messier catalog items).

Another option I was pleased to encounter allowed me to enter my own data for objects I want displayed in Distant Suns! Up to 500 user-defined objects are allowed, although I would like to see Virtual Reality Labs allow more entries for those of us wanting them, utilizing either floppies or a hard drive for the extra storage. Only a single object was listed in the manual, although a sample database was included with the program for people to look at when building their own database. A What's Up menu item shows gadgets for all planets and meteors, and clicking

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on a gadget shows its location at the current time plus the next occurring meteor shower. The final menu item discussed for this list is the Yale Catalog item; this displays information from the Yale Catalog for each displayed star.

OWNER'S MANUAL

Seldom does an owner's manual make an impression on me. There are only a few that stand out: Spectrum Holobyte's Falcon and WordPerfect Corp.'s WordPerfect manual. I now have another to add to the list—the manual for Distant Suns. This manual not only addresses the program well, but it is well indexed and organized, and it spends a considerable time covering the topic of astronomy! My only complaint about the manual is that it uses a firm back instead of spiral binding, so it is more difficult to keep open while referring to a certain manual page while working with the program.

The manual covers the planets (see Appendix C): their size, orbital speed and surface gravity. In addition, topics like the "opposition to Mars", stellar occulations, and the "Jupiter Effect" are well explained. In-depth information on stars includes: magnitudes, B-V, double stars, names, variable stars, stellar classes, and spectral classes. The manual also takes a look at (and describes) star clusters, galaxies, nebula, and the Messier (Appendix A) and NGC (Appendix B) catalogs. Appendix D contains meteor data, and Appendix E contains location/time information for many cities around the world. Appendix F contains a list of supplementary reading sources on astronomy, and Appendix G gives the lowdown on how to purchase that first (or any) telescope for newcomers to the field of astronomy.

ADDITIONAL INFORMATION

Neither Mike Smithwick nor Virtual Reality Laboratories wanted to leave Distant Suns owners without a route to expand their product, so they decided to produce expansion disks to accompany Distant Suns. The first expansion disk is the Yale Data Disk, containing 9100 stars of the Yale Bright Star Catalog. The next is a disk containing 200 digitized images of deep sky images, and this disk is well done! These digitized images are displayed on the screen whenever this disk is in a second drive, and you use the identity option for a deep sky object. The main Distant Suns disk has only three digitized galaxies included (for M53 and M101), and these pictures will give you an idea if you will want to buy this disk for Distant Suns. This disk adds a lot to Distant Suns and I encourage owners to consider adding it if they only have one to choose from (although the Yale Bright Star Catalog is handy to have around!). The third means of expanding Distant Suns is the Skymap Data Disk series. This series will, when finished, contain 250,000 stars from the NASA sky catalog. The first two-disk set of this series has the first 20,000 stars, and is meant for use with systems utilizing a hard disk.

Overall, I was very impressed with this product. Since I have studied astronomy for over twenty years, I am pleased to find this program available for my favorite computer. I did not meet the GURU even once in all the time (which was quite extensive!) I spent with Distant Suns. I did notice that I needed to redraw the screen after using several different options, like the telescope, which erased a small part of the screen. I also noticed that the outer borders of the telescope's window occasionally disappeared after using four or five different options in the same window. I recommend this program to anyone with either a serious or minor interest in astronomy. I also recommend it to those clamoring that the Amiga lacks suitable educational material to attract schools to purchase more of them for the students. With more educational products of this quality, I don't see how schools could afford to be without at least one Amiga for every student! For $69.95, how can you go wrong?

By the way, if any of you are familiar with an earlier program called Galileo, you should be aware that Distant Suns is actually version 3.0 of that award-winning software. When Infinity Software closed, the author (and owner) of Galileo went to Virtually Realities with a drastically improved version, which is what we have here. Although Virtual Realities has never had any connection with Infinity Software, they have been kind enough to offer upgrades for registered owners of Galileo. Please contact them for details.

•AC•

Distant Suns
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bug bytes

by John Steiner

There is lots of correspondence this month. First off, a letter from Leland Hosford of Cedar Rapids, IA brings up an interesting bug in Workbench 1.3. Here are the steps as he described them to reproduce the bug:

"The following will reproduce what I assume is a bug in Workbench that I have encountered in a couple of different ways: initialize a disk using the Disk/Initialize menu item; double click on the disk icon to open the disk window; click twice on the left arrow gadget at the bottom of the disk window (this should move the Trashcan Icon near the center of the window); copy something from another disk by moving its Icon to the upper left of the disk window (to where the Trashcan Icon was originally); select the item copied from the other disk, move it slightly (such that the pointer is still over where the Trashcan Icon was originally), and then release the mouse button.

"It is not intuitively obvious that this should cause the item to end up in the Trashcan. This is just the simplest case of this I've been able to reproduce. I looked for this simple example in an attempt to figure out why things occasionally 'disappeared' into a drawer on one of my disks which had several drawers whose positions had previously been 'fixed' using the Special/Snapshot menu item. The first time this happened to me I was quite troubled when one of my drawers 'disappeared', until I discovered that it had just been moved into another drawer." Mr. Hosford also goes on to comment that he's reproduced this effect using Version 1.3 on an Amiga 2000 with several add-ons and also on a stock 512K Amiga 1000.

I'm sure I have run into this myself on occasion: I have lost files that have disappeared into a drawer somewhere, and looked all over for them, only to find them in a drawer. I've always thought that I had just accidentally released the mouse button slightly as I was moving the icon over the drawer.

•

Noel Baebler of Richmond, VA writes to comment about his DeluxePaint III reporting incorrectly on the amount of available chip RAM, as reported in Bug Bytes in issue 4.12. His system also leaves 30K of chip RAM unaccounted for.

Noel also reports on the problems with revision 6.1 motherboards. He has an Amiga 2000 with a Microbotics HardFrame, Seagate 138n hard drive, MegaBoard 2000 RAM card with 2 MB on board, and the Fatter Agnus. He has had problems with TV*TEXT Professional going off to the Guru. Errors have occurred in hi-res, lo-res, interlace, and maximum overscan. The Guru number he reports is #00000003. 00032075.

He has also had the hard disk develop a read/write error when in the process of saving a brush in TV*TEXT Professional, requiring him to reformat his hard disk. TV*SHOW doesn't seem to work properly on his 6.1 motherboard either. He is consistently unable to do screen transitions with the push, reveal, wipe, and roll effects in maximum or medium overscan.

Zuma has suggested that the controller/hard disk combination might be the problem in the first case; in the latter case, they think it's a timing problem.

Are other people with revision 6.1 motherboards having problems with either TV*TEXT Professional or TV*SHOW?

•

I received a postcard from Del Blair (I think—I had trouble deciphering the hand writing—sorry if I got it wrong) of New York. He writes of a problem with Sculpt 4-D: "Often, when you cut and paste a hierarchy, all hierarchy information will spontaneously erase from the sections you did not touch, causing major damage to your work."

He reports that this problem has been verified by their technical support people. He further comments that to his surprise, they told him that no fix for this bug is in the works.

•

Ronn Black of Laurinburg, NC reports on two bugs that he's trying to verify. He has an HP Paintjet printer, and he comments that when using the Paintjet driver from Workbench 1.3, streaks occur on certain HAM printouts. The bug appears to be limited to the HP driver, he reports, because the EpsonX and EpsonX_Old drivers do not exhibit this behavior.

I have noticed that on occasion HAM mode pictures have streaked on the Paintjet that I have access to. I have not noticed that it was repeatable on a given picture, so I have always blamed a temporary clog in the ink jet or some other problem. I have also had problems with the Paintjet when using Professional Page or other programs that print small blocks of

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the page, process the next block, then print it. The problem is that streaks occur during the first pass of the inkjet cartridge after it has been waiting for the computer. This problem can often be cured by removing the cartridge and "priming" it in the cartridge primer that is normally used when the cartridge is first installed.

Mr. Black also reports problems in Lattice C version 5.04 compiler. He comments that several of the Libraries with this version have problems with some of the low level floating point routines. Also CPR V1.04 has problems displaying floating point variables. All of the above have the potential of causing a visit to the Guru.

He further reports that patches are available from Lattice which resolve these problems. The patches are available to registered Lattice C owners on the Lattice BBS in the files called FIX504A.ARC. It should also be available by contacting Lattice Technical Support. *Lattice, Inc., 2500 S. Highland Ave., Lombard, IL 60148, (800) 444-4309.*

While working with the 9/29/89 release of WordPerfect 4.1, I have run into a bug that could have cost me the loss of a document had WordPerfect not had the foresight to have an automatic backup mode. With some experimentation, I have confirmed the bug is consistent on at least two differently configured Amiga systems.

If you do a word search from the List Files requester (F5-9), and it finds a word being searched for, it highlights the files that contain the word. If you then choose another word and tell it to search, it proceeds to search through the highlighted files. Upon completion of the last file, the mouse pointer locks, the system hangs, and the only way to get control of the Amiga again is warm or cold boot. One of the features I appreciate most about WordPerfect is its automatic backup, where documents are saved in a temporary file so they may be recovered automatically the next time the program is accessed.

I have found another problem with the word search function as well. It seems to only search for the first word in a text string you give it. For example, I wanted to use Word Search to find out if I had already reported on the upgrade to DeluxeVideo III in a previous column. I put DeluxeVideo in the word search requester, and to my surprise, I found it highlighted four previous columns. I know I am not so forgetful that I would have reported on DeluxeVideo four months in a row, so I loaded each document individually. In the columns, I had reported on DeluxePaint, DeluxePrint and DeluxeVideo. It seems that the word search function found Deluxe and highlighted the requester to indicate a match.

•

A note on People Link reports a bug in the clipboard device. Perry Kivolowitz reports that if you write to the clipboard, when you close it, it will lose 536 bytes of RAM until the next time you reboot. Each time you use the clipboard, an additional 536 bytes is lost. The effects of this bug will be noticed after several attempts to cut and paste to or from the clipboard device. Some software, probably the most common of which is the Workbench Notepad program, uses the clipboard device in its cut and paste operations. He commented in the posting that Commodore Technical Support has confirmed that this bug exists.

Last month I reported that Antic software's Phasar has been upgraded to version 4.0. There is a problem with the automatic check printing feature that may cause the check printing feature not to work properly. If you use the check printing feature and are having problems, contact Antic for a fix. *Antic Software 544 Second Street, San Francisco, CA 94107, (800) 234-7001.*

•

Sunrize Industries has sent registered Perfect Sound users an upgrade notice, according to a posting on People Link. The posting states that the software upgrade is $10.00 and a software and hardware upgrade is $40.00. Send in your registration card to be sure you get future upgrade notices. *Sunrize Industries, P.O. Box 1453, College Station, TX 77841, (409) 846-1311.*

•

I received a press release from Peter G. Evans. The release states that the family history program "GENP" has been upgraded to release 1.02. In order to receive the free upgrade, please send the disk labelled GENP and the bottom-most upgrade sheet from the manual to them. Please use their disk mailer sent with the program, otherwise a fee of $3 Australian is required. This release is only available to persons who have an Amiga with more than 512K. They will also send you their latest Productivity Notes and Technical Notes. This release makes available faster screen updates, and also fixes two unreported bugs. *Australian GENP, 37 Charles Street, Cheltenham, Victoria 3192, Australia.*

That's all for this month. If you have any workarounds or bugs to report, or if you know of any upgrades to commercial software, you may notify me by writing to:

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...or leave EMail to Publisher on People Link
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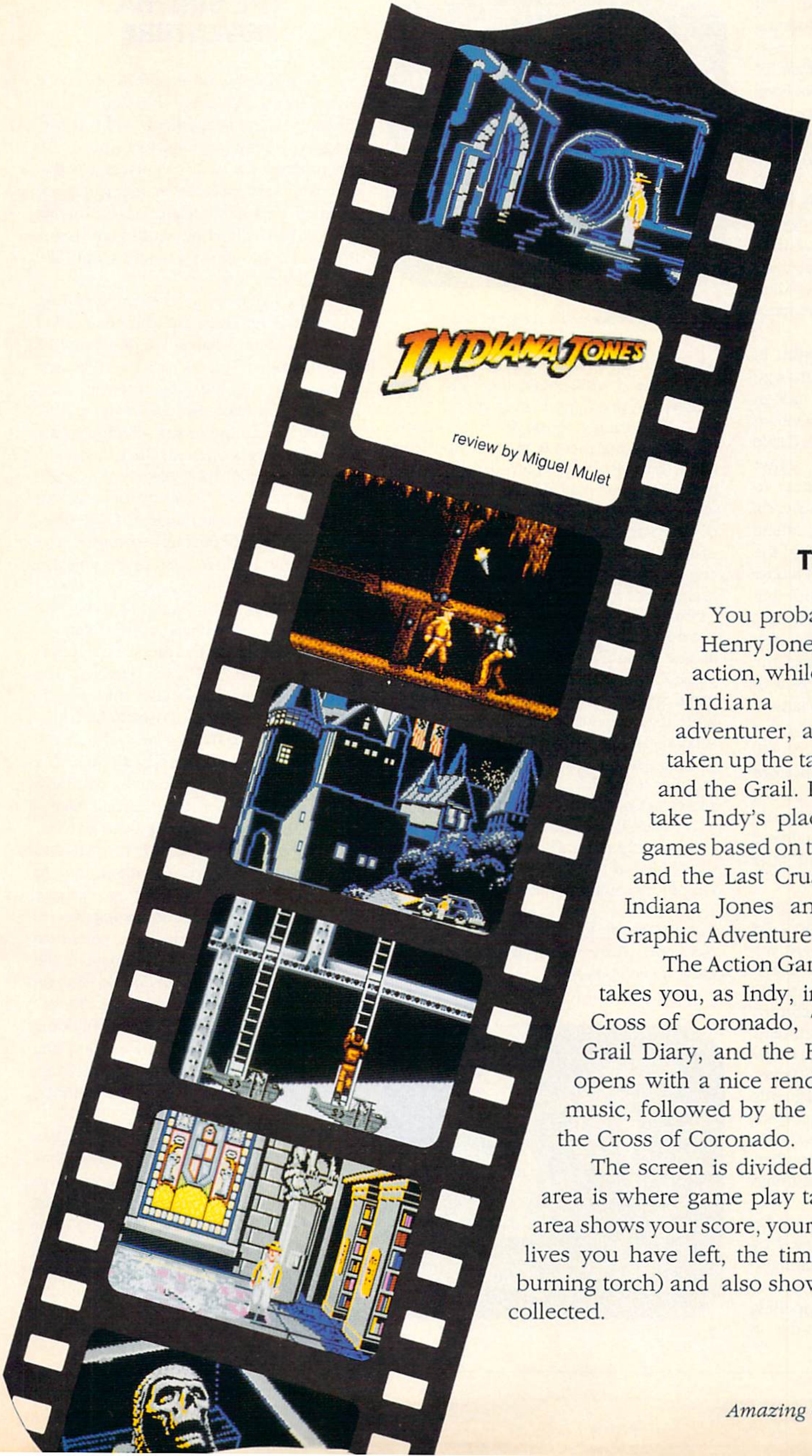
•AC•

INDIANA JONES

review by Miguel Mulet



THE ACTION GAME

You probably already know the plot: Henry Jones (Indy's father) is missing in action, while in search of the Holy Grail. Indiana Jones—archaeologist, adventurer, and all-American hero—has taken up the task of finding both his father and the Grail. If you are up for it, you can take Indy's place in one of two different games based on that scenario—Indiana Jones and the Last Crusade, The Action Game or Indiana Jones and the Last Crusade, The Graphic Adventure.

The Action Game is a one-disk game which takes you, as Indy, in search of 4 artifacts—The Cross of Coronado, The Crusader's Shield, the Grail Diary, and the Holy Grail itself. The game opens with a nice rendition of the movie's theme music, followed by the first scenario—in search of the Cross of Coronado.

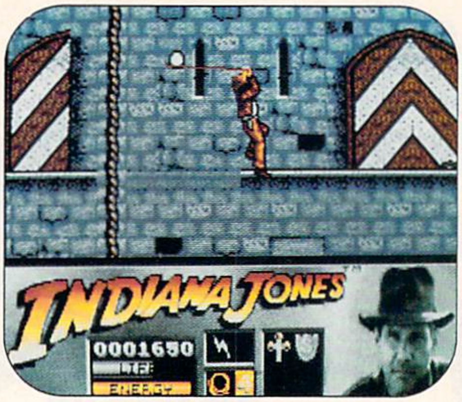
The screen is divided into 2 portions. The upper area is where game play takes place, while the lower area shows your score, your energy level, the number of lives you have left, the time remaining (in terms of a burning torch) and also shows which artifacts you have collected.

In the Cross of Coronado, you assume the role of young Indy, dodging falling stalactites, Indians, and Cowboys, as you search a mine for the Cross of Coronado. Indy makes his way from level to level by climbing up and down the numerous ropes in the mine. The light grows dim as your torch dies, but you can find new torches along the way, which gives you more time to find the Cross. Once you have the Cross in hand, you work your way out of the mine, and you must then make it across a circus train. Here you must make it to the first car, while avoiding rhinoceros horns, giraffe heads, and more cowboys and Indians.

Assuming you are successful in acquiring your first artifact, you can then go in search of the Crusader's Shield, hidden somewhere in the catacombs beneath Castle Brunwald. (Did I say 'beneath Castle Brunwald?' Somehow the game programmers moved it from Venice to Germany!) This search has an adult Indy avoiding rats (he HATES rats!) and falling fireballs. Indy will not be able to find the shield, however, until you have overcome the copy protection. To choose the right area of the catacombs to search, you must use the right entrance. Above each entrance are hieroglyphics. To find the right entrance, you turn to the back page of the included newspaper (The Byzantine Crusader), and read the hieroglyphics that correspond to the date presented on the screen. Then all you do is find the entrance with the same hieroglyphics (which change from game to game). So that you do not copy the codes, they are printed in red and blue ink and require a red filter (included) to read.

With the Shield and Cross in hand (and providing you have one of your six lives left), you are ready to board the zeppelin in search of the Grail Diary. (Apparently Henry left it somewhere on board). The zeppelin is not much different from the previous two levels – but instead of climbing up and down ropes, you climb up and down ladders to the different compartments of the zeppelin. Nazi guards try to stop you and become more insistent in their search once your "pass" expires. The passes take the place of the torches, and once again more passes can be found by searching the zeppelin.

The final level is the search for the Grail. The passage of time is marked by Henry's heart—which is slowly turning to stone as time passes. In this level, you must avoid blades, bottomless pits, and spelling tests (don't forget the different ways in which the Lord's name can be spelled!) If you succeed, you obtain the Grail, save Henry, and live happily ever after!

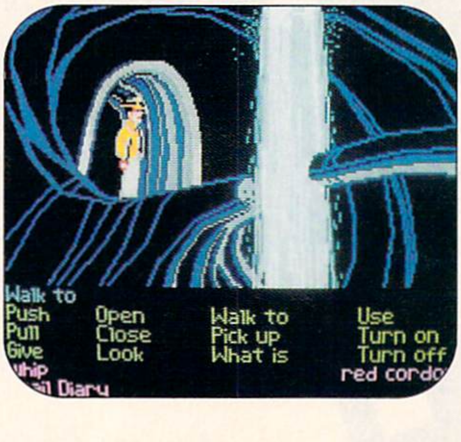


Above: It looks like Indy is in a bit of trouble.

Surprisingly enough, the Action Game does not provide much action. The game graphics and digitized sounds are great, but game play is limited to knowing when to move and when not to. Fighting cowboys and Nazis does not provide much of a challenge, and play on all four levels consists of not much more than waiting and timing your movements. It took me about 7 hours to get through the entire game, and I'm not what you would consider a good arcade game player. You cannot save the game, but once you get by level one, the game will allow you to start at a higher level, if you decide to do so before your 10 seconds are up. If you fail the fourth level, you must start over at level three. The game requires a joystick and 512K. Lastly, high scores are not saved to disk.

Thus, the Action Game is mediocre at best. Luckily, LucasFilms Games gives us the choice of another Indy scenario—the Graphic Adventure.

Below: One of the many animated game sequences - (sorry, modern printing still doesn't allow moving pictures)



THE GRAPHIC ADVENTURE

The Graphic Adventure is also based on the movie "Indiana Jones and the Last Crusade." If you're familiar with the movie, the game is similar enough to the movie for you to know the basic characters. Luckily, the clues and puzzles in the game are different enough from the movie for the game to be challenging and fun (and this is from someone who in general does not like adventure games).

The game is provided on three non copy-protected disks and can be installed on a hard disk. 1 megabyte of memory is recommended (users with 512K are advised to unplug any external disk drives). You start the game by double clicking on the Indy icon, which appears when Disk #1 is opened. Once the theme music and credits have played, you begin your job as Indiana Jones by making your way to your office at Barney College (they left out the part of Indy as a teenager). The plot is fairly similar to the movie—you visit Donovan at his office, make your way to Venice, rescue Henry from the Nazis, and then find the Holy Grail before Hitler!

The top portion of the screen is blank and is where dialogue between the characters appear. Below this is the graphics screen, which shows the area Indy is presently in. At the bottom of the screen are the available commands, along with a scrolling inventory of the items you have collected. Movement in this game is easy—just point where you want Indy to go, click the left mouse button, and he walks to where you are pointing. The game tends to default to the "WALK TO" command, because Indy does a lot of moving around in this game. To examine items, you move the cursor to the "LOOK" command at the bottom of the screen, and double click on the item in question. The player doesn't have to type in commands, and thus the player can concentrate on solving the puzzles rather than figuring out the exact phrasing of a command. In this manner, you go around exploring Indy's world.

Basically, this is a simple interface, similar to the ones used in the LucasFilms games Maniac Mansion and Zak McCracken, but in this case you are not just limited to pointing and clicking. For instance, when you get to Castle Brunwald, you may just have to fight a Nazi guard or two. To do this, you switch to the numeric

(continued on page 90)

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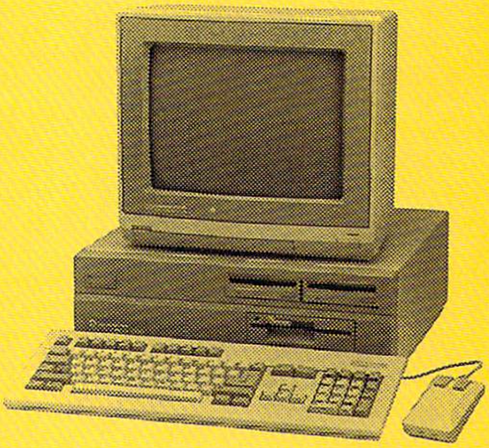

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by Phil Saunders

Xetec's SCSI Controller

Subjectively, the FastTrak appears to be quite fast. It is certainly a great improvement over floppy drives.

I have always liked happy endings. If you read my article on Amiga 1000 expansion in *Amazing Computing volume 4 issue 11,* you may have gotten a rather pessimistic impression of the Amiga 1000. Fortunately, I have now found a hard drive for the Amiga 500/1000 that works perfectly with my computer. The Xetec FastTrak consists of an autobooting hard drive controller, a hard disk case with power supply, and the hard drive itself. I chose to buy just the controller and the case, adding my own Seagate SCSI drive. The result is a powerful and expandable hard drive system.

The Xetec SA-10 is the SCSI host adapter for the Amiga. It is about an inch high, three inches wide, and nine inches long. Like most expansion devices for the Amiga 1000, it fits in the expansion slot on the right side of the computer. The host adapter has two jumpers which must be set before installation. One controls whether the controller autoboots (Kickstart 1.3 is required for autobooting). The second jumper controls whether power for the adapter comes from the Amiga or the hard drive power supply. Xetec documentation recommends using the hard drive power supply if you are using more than one peripheral on the expansion bus, or if you have expansion memory installed in the SCSI adapter. The Xetec host adapter includes a bus pass-through, so most other Amiga 1000 devices should work.

The host adapter will accept a $100 card from Xetec which contains four low profile SIMM sockets. These sockets allow the use of 256K, 1Meg, or 4Meg SIMMs to expand your Amiga's memory. SIMMs must be added in pairs, so possible memory configurations range from 512K (two 256K SIMMs), 2 Megs (two 1 Meg SIMMs), 4 Megs (four 1 Meg SIMMs), to 8 Megs (two 4 Meg SIMMs). The availability of the add on memory card, its availability is an important plus for the FastTrak, allowing easy and low cost memory expansion for the Amiga 1000. My card has two 1 meg SIMM and has given me no problems so far.

The hard drive case is slightly smaller and thinner that the Amiga 1000 itself (fourteen inches wide by twelve inches long by two and a half inches high). It has a metal case and a plastic front with a slot for a 5 1/4" hard drive. The case also contains an internal power supply, on/off switch, and a SCSI connector. It can sit on top of the Amiga and is sturdy enough to support a monitor.

Xetec sells complete FastTrak systems that come with pre-formatted hard drives. To use these systems, simply install the SCSI host adapter on the Amiga's expansion port, connect the adapter to the hard drive case, and plug the power cord into a socket. The alternative to buying a complete system is to purchase just the SCSI adapter and case from Xetec and supply your own SCSI drive. I used the FastTrak with a Seagate ST157N-1 49 Megabyte hard drive. This drive has a twenty-eight millisecond access time; use of a faster or slower drive would affect the FastTrak's performance.

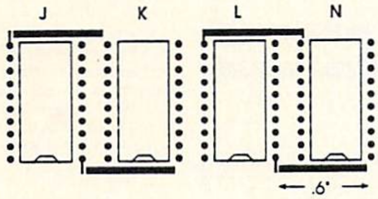

Figure One
Front of A1000

While the documentation included with the Xetec FastTrak is quite good, I had some trouble getting the drive to work. I initially used the Xetec 1.2b version software. After I ran into some problems, I downloaded version 1.4 from Compuserve which was easier to use and offered several performance advantages. The software wasn't the problem though; my trouble was hardware related.

As many Amiga 1000 owners know, the Amiga 1000 sometimes has problems driving more than one expansion device at a time. This problem is related to noise on the expansion bus and the use of inferior PAL (Programmable Array Logic) chips on the Kickstart daughterboard. *Amazing Computing volume 3, number 3* included a fix for reducing the noise from improperly grounded PAL chips. (Be careful! The correct diagram is included in AC V3.4 page 102, or see Figure One this page). Essentially, the fix involves connecting the power leads of the four PALs together and connecting the ground leads of the four PALs together.

If grounding the PALs doesn't work, the next step is to replace the inferior Texas Instrument PAL chips with Magnetic Memories, Inc. (MMI) chips. I used MMI PALs salvaged from an old Kickstart board. I first removed the TI PALs from the Kickstart board and then installed sockets. The sockets should be grounded just like the PALs. Finally I installed MMI PALs into the sockets. Most authorities say that only two PAL chips need to be changed, but I got most reliable results by changing all four PALs. Be careful! This modification requires extensive soldering on your Amiga. Unless you are comfortable with a soldering iron, you will probably want to get a dealer to do this work. While grounding the PALs isn't hard, replacing them requires desoldering of the four chips and then installing sockets. The Kickstart daughterboard is no longer available as a separate item, so a serious mistake might require replacing the motherboard!

Once I completed these two modifications, I got the Xetec FastTrak to work reliably with my Microbotics Starboard II memory board. There is one additional modification you can try if changing the PALs doesn't work. The Amiga 1000 expansion bus comes directly from its 68000 processor. Another option is to install a 68010 processor in place of your 68000. The 68010 uses improved buffering to produce a stronger signal and is pin for pin compatible with the 68000. The 68010 is also almost 100 percent software compatible; however, some games and programs that break the Amiga's rules may not work. Software fixes are available for most of these. An added bonus is that the 68010 offers a 3 to 10 percent increase in processor speed. I bought my 68010 for only twenty dollars; I've had no problems with my FastTrak system since I installed it.

For an Amiga 1000 owner looking for a hard drive and memory expansion, the Xetec FastTrak is just the trick.

Once I got my Amiga's PALs straightened out, I found that the FastTrak worked very well. I had to install my 3 1/2" drive in a 5 1/4" adapter and then install the adapter in the hard drive case. I had a little difficulty in opening the FastTrak case, but soon managed to install the drive. The power supply and SCSI connectors are standard and plugged right into my drive. I then reassembled the drive case and connected it to the SCSI host adapter. The assembly took a little time, but the spiral bound Installation Manual was quite clear. The manual is written for the Amiga 500 but includes an insert for the Amiga 1000.

Once the hardware was installed, I had to do a low level SCSI format using the SCSI Tools program. I simply selected the appropriate drive model and edited the default parameters to choose the proper interleave value. I had to call Xetec to get the proper value–it probably should have been included in the documentation or in the SCSI tools program. The program then completed a low level format with no problems.

The next step was to use the Partitions program to partition a high level format of the drive. You can set up as many as twelve partitions per drive. If you choose to use autobooting, the first partition must use the standard file system; all others can use the Fast File System. The Partitions program uses an Intuition based interface. Standard values for the partitions are filled in as soon as you select a drive, but they can be easily modified, if you choose to do so. Generally, you will only need to modify the cylinder range and the name of each partition. Once the parameters have been set, select format, and Partitions will format the selected partition. I have two minor complaints with the Partitions program. I named a partition "dh0:" and the program added an extra colon, making the name "dh0::". Better error checking would eliminate this problem. My second complaint is that you must wait until one partition is formatted before formatting the next partition. It would be better to select all the partitions you want formatted and then have the program format them one after the other.

Once partitioning and formatting are complete, the next step is installing the operating system on the drive. The FastTrak software includes two programs which automatically set up the drive to autoboot or to boot from a floppy disk. These programs work very well, requiring little user assistance to set up the drive.

Of course, all of these steps are unnecessary, if you purchase a formatted drive from Xetec. If you choose to install your own drive, the formatting process is fairly easy and uncomplicated. The manual does a good job of explaining the various

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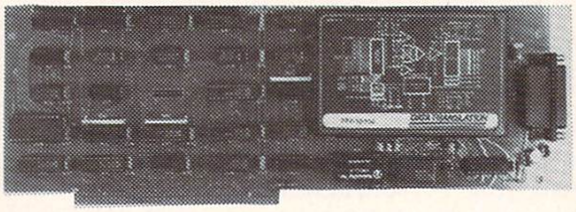

Proto-40K is the first and only fully featured data-acquisition and process-control expansion card for the Amiga 2000. The Proto-40K features a 16 channel 12-bit multiplexed analog-to-digital converter, two 8-bit digital-to-analog converters, a 3-channel programmable timebase, 16 digital inputs and 16 digital outputs. Proto-40K also features a highly stable instrumentation amplifier with programmable gain, multiple triggering sources, and on-board digital waveform generation. Data acquisition and process control projects are a snap to develop with the Proto-40K Data Acquisition System (DAS) software and 'C' source code. Sample application programs and source are included for each of the Proto-40K functions. Now sold in various custom component configurations. Buy only the functions you need. Call for new lower pricing.

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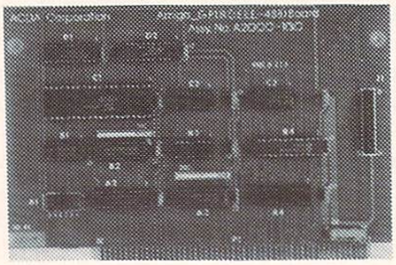
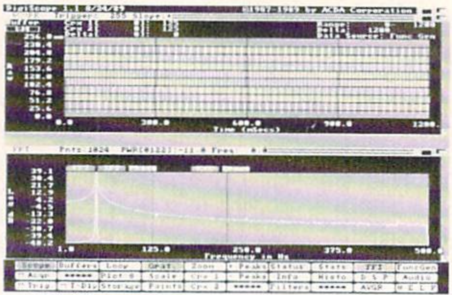


Amiga_GPIB is a General Purpose Interface Bus card for the Amiga 2000. This half-length expansion card performs all the Talker, Listener, and Controller functions of the GPIB (IEEE-488) protocol. One Amiga can control up to 14 GPIB devices. Includes Command Function Library (ACDA GPIB CFL), test application program and 'C' source code driver. $495.00



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programs and their error messages. It took about half an hour to format and partition my 49 Meg hard drive.

The bottom line of any hard drive system is performance. The Xetec system performs quite well. I used Disk Perf 3.0 to measure the performance of the controller and drive.

Xetec FastTrak Performance (Seagate 157N-1)
File Create: 14 files/second
File Delete: 22 files/second
Directory Scan: 89 entries/second
Seek/Read: 71 seek-reads/second

Buffer Size	Write Speed	Read Speed
1024 bytes	50251 byt/s	47953 byt/s
8192 bytes	168220 byt/s	124337 byt/s
32768 bytes	208326 byt/s	149796 byt/s

Subjectively, the FastTrak appears to be quite fast. It is certainly a great improvement over floppy drives.

There are one or two other features I should mention. The FastTrak uses a hardblock method of mounting partitions, so no explicit "mount" statement is necessary. As soon as you refer to a partition, it is automatically mounted. This is quite convenient and saves memory as well. The FastTrak controller also supports SCSI networking. Not only can the computer control more than one drive, but more than one computer can access any particular SCSI drive! Presumably you could hook up several computers (each with a FastTrak interface) to one large SCSI drive. Note that only one of these computers can be set to autoboot from the drive. The SCSI networking features of the FastTrak are not particularly well documented, so if your applications require this feature, you should contact Xetec to make sure the network will do what you want it to. Nevertheless, SCSI networking could be quite valuable to people who own more than one Amiga.

Several other pieces of software are included with the drive. The most important of these programs is X-Chive. X-Chive is a back-up program which will back up part or all of any device to floppy disks. While X-Chive has a fairly friendly interface, I cannot recommend it. When I tried to back up my hard drive, X-Chive locked up several times and refused to continue after one of my floppies had a disk error. X-Chive is a nice bonus, but not a substitute for a dedicated backup program like Quarterback. Xetec has improved their X-chive in 1.42 release of their software but I still find a separate backup program to be easier to use.

On the whole, I am quite pleased with my Xetec FastTrak. It offers many advantages: autobooting, good performance, expandability, networking, and compatibility with other Amiga 1000 devices. The availability of an inexpensive memory expansion board is an added bonus. Its only disadvantage is that the support software is not quite as polished as it could be. For an Amiga 1000 owner looking for a hard drive and memory expansion, the Xetec FastTrak is just the trick. A version for the Amiga 500 is also available.

SA-10
Xetec, Inc.
2804 Arnold Rd.
Salina, KS 67401
(913) 827-0685
Price: $249.95
Inquiry #200

•AC•

ROOMERS

by *The Bandito*

[The statements and projections presented in "Roomers" are rumors in the purest sense. The bits of information are gathered by a thirdparty source from whispers inside the industry. At press time, they remain unconfirmed and are printed for entertainment value only. Accordingly, the staff and associates of Amazing Computing™ *cannot be held responsible for the reports made in this column.]*

The Bandito has exhumed the bones of several companies for your edification on the difficulties of staying in business. In Memoriam, the following eulogies are offered:

DOA

The word is out that Discovery Software has folded. You know, the folks who brought you Marauder (the pirate's delight), and then dropped it when they got into games like Arkanoid. They ran into hard times when they tried to do color scanning for the Mac. Seems like somebody looked at a Digi-View and figured out they could pull the same trick with Mac scanners. Take three images with red, green, and blue filters, and then combine them to get a color image. They got entangled legally with the software developers and it got so messy that they had to fold. Seems like we may have to wait a while for Arkanoid III.

MISSING AND PRESUMED IN REALLY BAD SHAPE

C Limited and CMI. Scattered reports from field observers talk about the same old problems of other hardware companies—poor inventory control and bad cash flow. Then again, these companies may have figured out a way to revive by the time you read this. Look at how Aegis hung on by its fingernails for about a year while it bled to death. Somehow it kept finding an occasional pint of blood to keep it going for yet another month.

Don't expect these companies to be the last ones to croak. Times are rough for marginal Amiga publishers, and most of them are marginal at best. The Bandito expects several more companies to exit stage right by the end of the year. The good side to this is that the remaining companies should be stronger by absorbing the products of their lost competitors (or just through reduced competition).

COMMODORE IN BUSINESS DEPARTMENT

Yes, they really are in business. Despite the relative lack of success for the Amiga ad campaign in the U.S., things are going pretty well for them in Europe. Their sales over there are booming, and the opening of Eastern Europe looks to be a big opportunity for Commodore. No, not for Amigas—for C64's. You see, the Eastern Europeans need cheap computers that can pass the technology restrictions, and the C64 certainly fits those criteria. Commodore should do some good business over there in the next five years. There are some Amigas already in Eastern Europe, in use as Cyrillic word processors (Russian language).

OTHER DEVELOPMENTS

Commodore has been busy expanding its dealer network. As an example, they recently signed on General Computer Centers, a 13-store chain in Pennsylvania and Delaware. They sell to government, corporate, small business, and educational markets. A small step, but another one in the right direction as Commodore attempts to rebuild its dealer network.

Speaking of networking, Commodore International announced the opening of its networking division in Denmark. The division will test, develop, and market networking products initially for Commodore's MS-DOS compatibles, but they plan to add support for the Amiga. This is a crucial area for the Amiga, and one that is receiving a lot of attention from management. If Commodore really wants to sell Amigas to businesses, the Amiga has to be able to hook into their network. The Amiga needs to work easily and gracefully with Novell, 3Com, and all those other networks. By the way, the Amiga's multitasking power can really shine on a network. It's very handy to be able to download files from a network while you're busy getting some work done on your word processor.

Meanwhile, Commodore has announced two new appointments to top posts. Walter W. Simpson has been named director of product marketing and the new Application and Technical Support (CATS) group's vice president is Jeff Scherb. There's still more jobs yet to be filled as the new organization unfolds. The Bandito has noted that veterans from many different companies are ending up at Commodore—a good way to give it the experience and scope it has been sorely lacking in recent years.

The Amiga ad campaign succeeded in creating awareness, but didn't increase sales as much as hoped—that's the word the Bandito hears from the electronic grapevine. Things are hot enough in Europe to give Commodore some good results. Commodore will try harder in the U.S. Look for a new campaign geared to generate sales, now that more people are aware of the computer's existence. The Bandito believes that the ad campaign helped—after all, IBM and Apple had lousy fourth quarters, too. Things would have been worse without the ads. Give

Commodore a chance to keep things moving before you throw in the towel in disgust.

Another big debate raging in Pennsylvania is over outline fonts for the Amiga. We already know they won't make it into 1.4. The question is not when, but what? Will Commodore decide to support the new Royal font standard proposed by Microsoft and Apple? Or will they be able to get a version of Adobe Type Manager done for the Amiga? ATM is a cute little product for the Mac that creates outline fonts for every font you have installed, so you can see non-jaggy fonts onscreen and get non-jaggy fonts on paper when you print out. The only problem is that it slows things down on the Mac screen display. On an Amiga, it wouldn't be as bad, but it would still be noticeable. It could happen, along with Adobe fonts in Amiga format. The question is, will scalable outline fonts be a part of the Amiga system or an add-on program? The Bandito votes for making it part of the system. Another leading contender is Bitstream, who makes Adobe-compatible outline fonts. Nobody knows who will win this race, but the Bandito has fun rooting for all the horses.

The Bandito has spied a new Amiga logo in the works. It's square instead of the curved one that replaced the slanted one that replaced... oh, you don't go that far back? The real insiders are the ones who have boing balls on their Amigas—the logos made by the original Amiga company way back when. Reliable sources state that there are still some of those stickers wandering around unstuck. The Bandito's still looking for some...

CES REPORT

The Bandito's agents reported that Commodore had a small booth, showing off their PC clones and the A500. Most of the attention was devoted to the tremendous Nintendo booth (more like a small city) that dominated the hall. Sega had the best looking games, while NEC had the noisiest booth. The hottest attraction was Commodore showing off its CD-ROM hardware prototypes behind closed doors. Developers were suitably closed-mouth about what they had seen, but the general reaction was favorable. "If only they market it right", sighed one developer. Time will tell. The prototype is being schlepped around to various developers in the hopes of getting solid software support by the time it ships. Since supporting CD-ROM is fairly easy, it looks like Commodore will have quite a bit of software on hand when they ship. Pressing CD-ROM disks is quite inexpensive—they're about the cost of floppies!

Commodore is working hard on their CD-ROM gadget, but don't expect it right away. The Bandito figures that Commodore is waiting to see what other CD-ROM based stuff looks like and the response they get—this year should see the debut of Philips' CD-I player (finally!), IBM's HPC with CD-ROM built-in, and maybe a CD-ROM player for Sega's Genesis machine. By waiting, Commodore can make their gizmo even better by covering any weaknesses in the other stuff. Among the unanswered questions: what market will this product go to, consumers or education/training/business? The Bandito says that Commodore is wiser not to be on the bleeding edge of technology this time. Let the other guys pioneer the market and lose the big bucks first. The Bandito would like to see a reasonably priced CD-ROM player made available for the Amiga line, let's say about $500. It shouldn't be too hard—CD-ROMs for IBM machines are selling for that much. Whip up some software drivers and there you are. With the Amiga's graphics and sound capabilities, Commodore could really make something out of this multimedia hype that Apple and IBM are indulging in. Think of the Amiga clip art disks you could have with 600 megabytes of storage! The expensive part is getting all the data to fill one of them up—after all, that's 600 megabytes or so of pictures, sounds, and program that somebody has to put together. Why, you could almost put the entire Fred Fish library on one CD-ROM (not a bad idea, at that).

Speaking of big events later this year, 1.4 is reportedly entering beta testing. So it seems that it's still on track for a summertime release date, though as usual the Bandito thinks it will be later rather than sooner. One thing to watch out for: programs with overscan hacks (such as DeluxePaint III, where you can paint in the overscan area in real time) are likely to fail, requiring a new version.

More and more games are flooding the market, and it looks like there may be a shakeout later this year. Of course, we've already lost big companies like Epyx and Mindscape, but more of the little ones like Discovery and Microillusions are headed for trouble. The Bandito would like to have a dime for every shoot-'em-up game on the Amiga. Don't these programmers ever try any different ideas? It's a relief to see one or two original thoughts like Populous or SimCity out there. Maybe we should slap a tariff on cheap European games to keep this junk from flooding the shelves. The Bandito sees fewer and fewer interesting, innovative games out there.

But it's not surprising to see less innovation among computer games. Most publishers are creating new games with an eye toward cartridges, so that means simpler games. And look for a veritable flood of conversions from cartridge games, as cartridge producers look to cash in on their investment. If you like arcade games, you're in for plenty of them. If you like intellectual puzzles and deep story lines, you're out of luck. Maybe after all the "me-too" games die out, we'll see more original titles. But that will take a few years to materialize. In the meantime, you'll just have to be very careful about the games you buy to avoid getting stuck with one that looks just like the game you bought last month, only with a different title.

Apple's troubles gives Commodore the opportunity to solidify a position in the low end market with the Amiga 500. Commodore can own the low end, but they're in danger of being squeezed out by the 16-bit game machines encroaching from below and the MS-DOS clones and Macs from above. The A500 price has got to come down to get that market share. And think about putting back the RF adaptor into the package. Best of all would be building the NTSC-out back in instead of the monochrome output. Time is running out, for Apple, IBM, and Nintendo are all eyeing that low end home computer market. Even our old friend Atari may be a threat—the Bandito hears that Tramiel is thinking of dropping the price of the 520 ST to around $300 and trying to blow it out as a game machine. While it may not work in the long run, it might hurt A500 sales in the short term.

Lest we forget some of the early Amiganauts, the Bandito offers this tidbit: Bob Pariseau, he of the ponytail hairdo at the Amiga introduction, is now working as director of engineering at Farallon. What's Farallon, you say? Well, they make Macintosh products. Yes, another one has gone over to the enemy. But think positive. At Farallon, they do inexpensive networking products. Maybe old Amiga buddy Bob can persuade them to do the same for the Amiga. What do you say, Bob?

NOSTALGIA ISN'T WHAT IT USED TO BE DEPARTMENT

The Bandito would like all those Commodore 64 magazines to stop whining about how their machine is still "really neat, and runs lots of useful software." The pixels are on the videowall, pals. Stop living in the past and trying to keep your ever-shrinking magazines from disappearing entirely. Buy an Amiga and quit whimpering about how nobody's doing any software for the C64 anymore, and gosh how terrible it is that Commodore won't come out with the C65.

•AC•

PD Serendipity

by Michael Morrison

Insight into the World of Freely Redistributable Software

• Roll On •
(Fred Fish Disk #302)

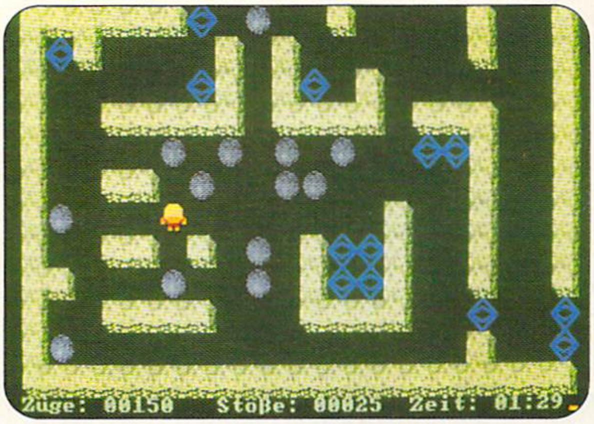
Roll On is a game that takes place in a cave system filled with rocks and blue diamonds. The object of the game is to push all the rocks on top of the diamonds. You can only have one rock on each diamond and can only push one rock at a time. You control the little man by using the arrow keys.

When playing the game, you have only a certain amount of time to move all the rocks to the diamonds. If time runs out, you have to start the level over again. When you get all of the rocks on top of the diamonds, the game moves on to the next level. The game has nine levels. If you get stuck, the HELP key will take back the last move. This can be useful if you are careful. I found myself pushing rocks into areas where they were of no use. Once you get a rock up against a wall or into a corner, there is no way of moving it off of the wall or out of the corner. This means you must plan ahead. If all else fails, the DEL key will start the level over.

There is also a game editor that allows you to create your own levels. When you are in the editor the F1—F10 keys allow you to place different walls on the screen. You choose the spot by moving a cursor around with the arrow keys. The DEL key will remove whatever object is under the cursor. The HELP key places the man, and the CTRL key places the blue diamonds.

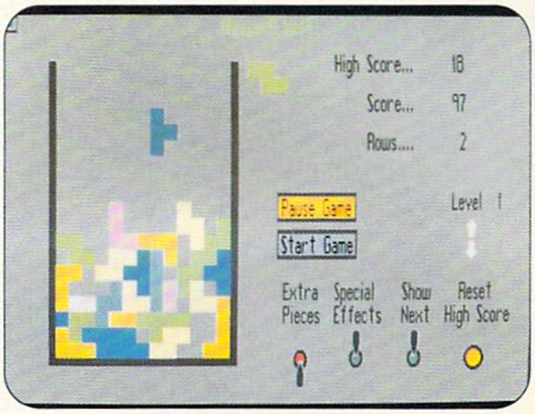
This game was written by Tobias Eckert and is shareware. If you like the game, Tobias suggests a $10 donation. You can send it to:

Tobias Eckert
AustraBe 17
6482 Bad Orb
West Germany



Above: It's a race against the clock to cover the diamonds in Roll On.

Below: The addictive Tetris-like game, Obsess-O-Matic 1.0.



• Obsess-O-Matic 1.0 •
(Fred Fish Disk #305)

Obsess-O-Matic is a real-time puzzle game similar to Tetris. The object is to fit the falling pieces together to form complete horizontal rows. If a horizontal row is completely filled in, it will then disappear off the bottom of the board, moving the rest of the pieces down one row. If the pieces fill in and reach the top, the game will end.

This game is written by Wayne Phillips and is shareware. If you send Wayne a $10 donation (see address), he will send you version 2.0 which includes:

1) Controllable board width & height (a smaller board provides a greater challenge and earns extra bonus points).
2) Programmable starting height of blocks (fills in random blocks to a given height; provides a challenge and earns bonus points).
3) Contains the pile driver piece.
4) Has magnetic walls.
5) Has a vaccine piece.
6) Has a virus piece.

If you send Wayne $15 dollars or more, he will send you version 3.0 which, in addition to the above, also includes:

1) Animated sprite special effects.
2) Graphic puzzle piece editor so you can design your own puzzle piece sets.
3) Several different piece sets.

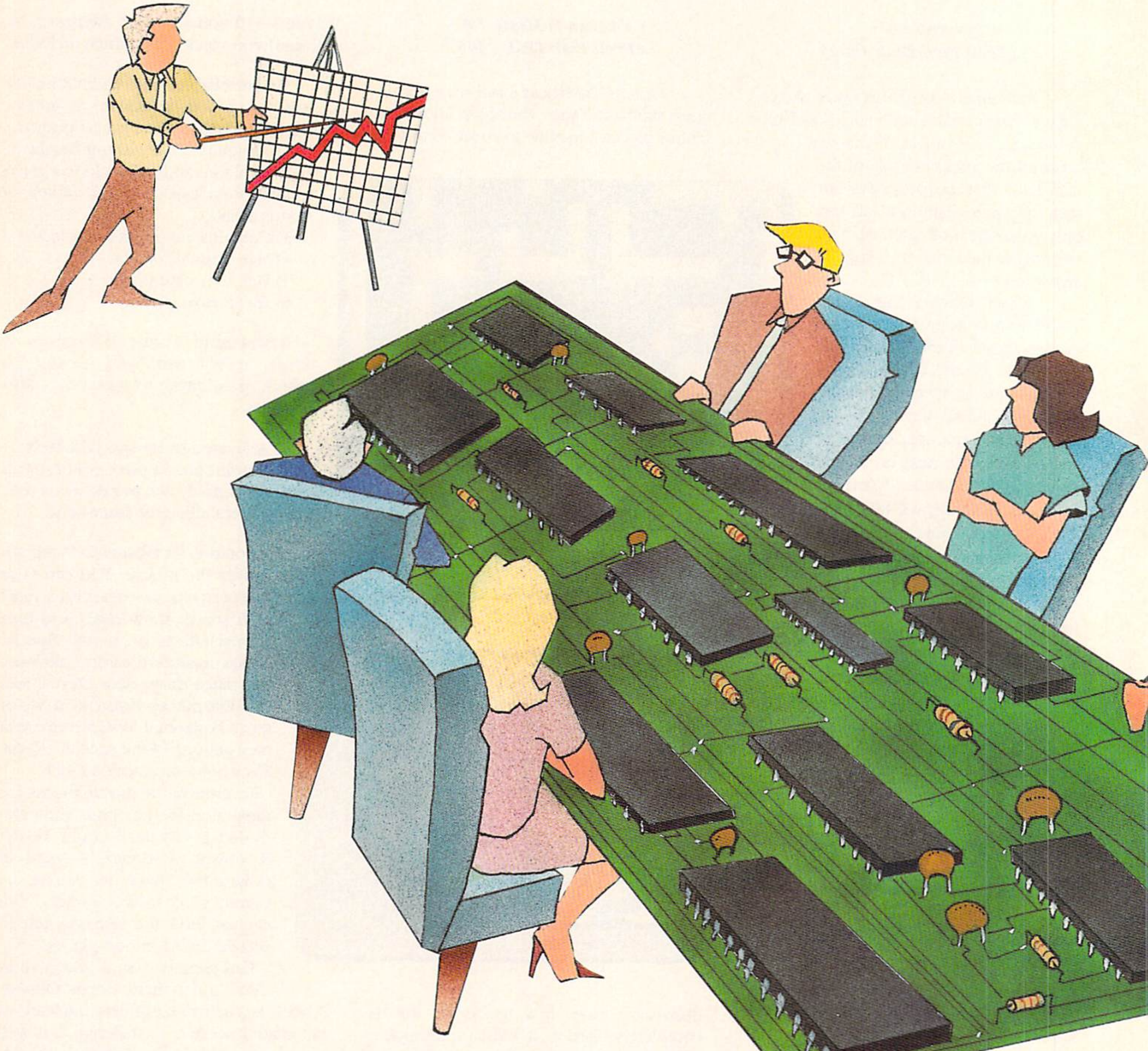
The controls for Obsess-O-Matic can be selected by the mouse. You can raise and lower levels, enable extra pieces, reset high score, show next, and turn special effects on or off. Special effects include firestorm, air raid, fast piece drop, filler pieces, and invisible pieces. If you fill in two or more horizontal rows at once you may get one of the special effects. They are a nice added touch.

Controls of the puzzle pieces are mostly on the key pad. They are: 4—left, 5—rotate, 6—right, 1—left & down, 2—down, 3—right & down. The space bar causes the current piece to drop rapidly. You can use the 1 and 3 keys to help fit puzzle pieces in odd places.

This game is just as addictive as Tetris and its many clones. Obsess-O-Matic has many nice effects and features that make it more of a challenge. It is well worth the shareware donation that is requested by:

Wayne Phillips
1364 HiView Drive
Southampton, PA 18966

•AC•



by Marion Deland

BRIDGEBOARD Q & A

INSIGHT AND ANSWERS TO THE TEN MOST-ASKED QUESTIONS ABOUT THE BRIDGEBOARD

It's a love-hate relationship, getting along with the Bridgeboard. We love having access to the vast library of PC software and inexpensive hardware, but we hate the struggle to get it to work properly.

As an Amiga consultant and tutor, I get a lot of questions about the Bridgeboard, especially from new Amiga owners. And I have asked a few myself in the process of getting up and running with it. Here are some of the most commonly asked questions.

#1 "My Bridgeboard is in place, but it's not working–I just get error messages."

Ah, yes. With the Bridgeboard, you get a whole new collection of error messages, and they are not always very revealing.

Bridgeboard connections are touchy. If the board's a little loose, or if the connector to the 5-1/4" disk drive is offset, you get messages like "Library file missing." Do not spend hours looking for a missing file; just take the top off your A2000 (it's OK!), check the connections, then press the Bridgeboard down evenly in its slot. Keep trying until it works.

If the Bridgeboard suddenly starts acting up, look to see if the board has worked loose. Check for dust and pet hair. As a last resort, switch the board to the other available slot. Once you've got it working again, remember to tighten the screw on the brace that holds the board in place. Having done that, check again to make sure it works before closing up the computer!

#2 "My 5-1/4" Bridgeboard drive doesn't show up on the Workbench screen."

That's fine, it's not supposed to. Think of the Bridgeboard as a separate computer, with its own disk drive(s). Because the 5-1/4" drive isn't part of the Amiga side, its icon doesn't show up on the Amiga Workbench. It's the PC "A" drive, and you'll only know it's there when you click on "PC Mono" and get the "A>" prompt. The PCDisk program, on the Amiga side, provides a connection between the Amiga and the PC, through which you can transfer files and even use Amiga devices as virtual drives for the PC.

(continued)

THE DYNAMIC RIFF SEQUENCER

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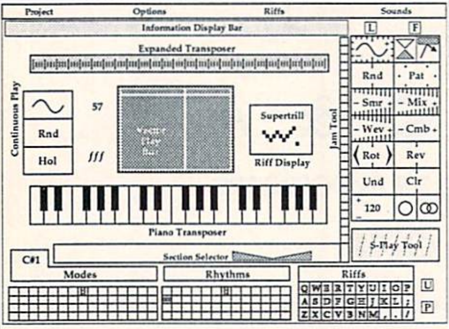
by Hologramophone Research



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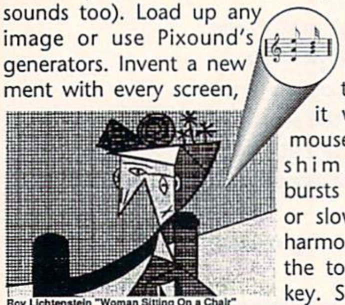
Roy Lichtenstein "Woman Sitting On a Chair"

Bring this ad to the AMI Expo for 10% off our special show prices!

Hologramophone Research
6225 S.W. 145th Street
Miami, Florida 33158

Circle 109 on Reader Service card.

#3 "Help! I can't get AREAD, AWRITE or JLINK to work!"

There are several possibilities here. First, make sure you have PCDisk running on the Amiga side. If you do, check JDISK.SYS is in the root directory of your system disk for the PC. If you put this file in a DOS directory of the hard disk, for instance, the computer will not be able to find it. Unless you specify the Pathname in your CONFIG.SYS files. You will also need JLINK.COM, but that can be in a DOS directory.

Also, check that you have added DEVICE = JDISK.SYS to your CONFIG.SYS file (the PC side), and then rebooted to allow the new CONFIG.SYS to "take".

Be careful to follow the syntax of the AREAD and AWRITE commands exactly. I get into trouble with this all the time, by expecting them to behave the same way as the MS-DOS COPY command. They don't.

#4 "I followed the instructions for installing the Bridgeboard exactly, but now I can't find the 'PC drawer' on my Workbench."

The Bridgeboard instructions explain how to install the software on your Workbench disk. Now that we have autobooting hard disks, however, these instructions can be confusing for a brand new Amigan. You can end up with the Bridgeboard software installed on a Workbench floppy instead of on your autobooting hard disk.

The best solution is simply to re-install the Bridgeboard files on the hard disk – in the Workbench partition if you have one. When the installation program asks which drive you want, choose dh0:. Get some advice from your dealer or local user's group, if you're not sure of what you're doing.

#5 "Can I use my parallel printer and my external drive with the PC?"

Sure. The LPT1 program, on the Amiga side, assigns the parallel port to the PC. It puts a little "bar" window up on the screen to remind you. To assign the printer port back to the Amiga, simply close the window.

To use your external drive with the PC, you have to change it manually. Unplug it from the back of the A2000 and plug it into the connector on the end of the Bridgeboard, which protrudes through a slot at the back of the A2000. Some people get an A/B switch to save wear and tear on the connectors. The PC will recognize the drive as a 360K "B" drive, but the size can be changed with a "Driveparm" command in the CONFIG.SYS file. However, the Amiga's serial port cannot be used with the PC side.

#6 "Can I use my mouse with the PC?"

One of the improvements in the software released with the 2286 Bridgeboard is a program called AMOUSE which, when run with the corresponding AMOUSE.COM program on the PC side, will let you switch your Amiga mouse between the Amiga and the PC with a hot-key combination.

#7 "I have three megs of RAM on my Amiga. Can I use it as extra memory for the PC?"

Yes, you can use the Amiga's RAM disk (or any other device) as a virtual disk drive for the PC. The key is JLINK, a PC command provided with the Bridgeboard; instructions for using it are in the Bridgeboard manual. To the Amiga, this virtual drive is a file; to the PC, it's another drive, complete with directories. It's as if the Amiga sees the envelope, while the PC sees the pages inside. Remember, if you JLINK a drive, you must unlink it before you turn off the computer.

#8 "Should I have a hard disk on the Amiga side or the PC side?"

There are pros and cons for both. PC hard disks and controllers are cheap and plentiful, and it is easy to set up a Janus drive partitioned for use by the Amiga side. I have two drives on the PC side – one for the Amiga and one for the Bridgeboard, an autobooting "C" drive. I've discovered, to my delight, that I can even use some of the superb PC hard-disk utilities with my "J" disk. And I have a Perstor controller that almost doubles the storage on both drives.

However, a "J" disk tends to be slower than an Amiga hard disk, because everything has to go through the Bridgeboard. And a "J" disk will not autoboot the Amiga.

An Amiga hard disk with a 2090A controller will autoboot the Amiga. With MAKEAB (the new Bridgeboard software), it will also autoboot the PC. The MAKEAB command sets aside part of your Amiga hard drive to use as a bootable PC drive. The resulting drive is much more stable and easier to use than a JLINKed virtual drive.

On booting, a PC looks for a disk in the "A" floppy drive first. If it finds nothing, it then looks for a "C" drive to boot from. The virtual drive created by MAKEAB ("Make AutoBoot") is treated as a "C" drive, and will autoboot the PC the same way.

(Thanks, Tom Holiday, for the update on this.)

An Amiga disk/controller is likely to be more expensive than its PC equivalent. By the way, the 2090A is rapidly gaining a reputation as an exceptionally fast and reliable controller.

#9 "Are there any PC programs that won't work with the Bridgeboard?"

Very few, as long as you work within the limitations of the system. In other words, you may have the same problems setting up programs under a Bridgeboard system that you would under any other PC system. There are PC programs that won't work in a 512K PC, such as programs that need an EGA card and/or a hard disk. These will work fine with the Bridgeboard, as long as you expand your system to fit them. In addition, the Amiga's multitasking ability has spoiled us – TSR ("Terminate and Stay Resident") programs on the PC aren't always easy to juggle, but that's not the fault of the Bridgeboard. It's because it is a PC. I have heard that a few graphics-intensive programs may not run with the Bridgeboard, but I have never seen one myself.

Remember that the default settings for the Bridgeboard are the equivalent of a "text-only" PC, no graphics. If you run a graphics program on the monochrome PC, it will either give you a polite message explaining why it won't run, or simply hang. To use a graphics program, you must change to the color PC. (Run PC Mono, type MODE CO80, then go back to the Amiga and run PC Color.) Or ask your dealer to change the default to color, an easy adjustment.

Also on this topic, there are problems getting PC Color to work with the new Bridgeboard software. The answer seems to be to re-install the Bridgeboard software possibly several times. First time booting with the Bridgeboard disk, I took it through the process four times before it worked, and to this day I have no idea where the problem was.

#10 "I'm new to the PC. What programs would make my life easier?"

With the PC, the good news is there's so much to choose from. The bad news is there's so much to choose from! To start with, get a good desktop/DOS shell like PC Tools Deluxe, especially if you have a hard disk. It's worth the price for PCShell alone. PCShell saves you from having to learn MS-DOS, which is slightly different from AmigaDOS.

If you are buying business programs for yourself, look into the cheaper alternatives to the well known programs. Some of the top sellers became PC standards because businesses bought them. They are good programs, but sometimes they take work to set up. Businesses have people on hand to customize these programs; you might have to spend a lot of time, or pay a consultant, to do what the in-house people do.

One program worth investigating is First Choice, from Software Publishing. It includes a simple word processor, database, spreadsheet, and business graphics – all for a very low price. In fact, all Software Publishing's programs are good, and very easy to use.

Look into Borland's business programs, too. They are lower in price and easier to use than the top sellers.

There are lots of public domain and shareware programs available for the PC, of course. Check the pages of Computer Shopper for ads. (I like Sizzleware's catalogs – they grade the programs for value and ease of use.)

All in all, there are a lot of advantages to owning a Bridgeboard. Just treat it as an exercise in patience!

•AC•

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HANDLING MS-DOS FILES

by Jim Locker

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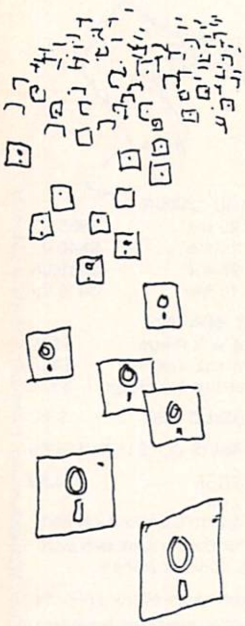
Visualize this: You are working with a spreadsheet in the office, using Lotus on an IBM or compatible. At the end of the day you save the spreadsheet to a 5.25" disk. You take the disk home, start up your Amiga, load up Analyze! or MaxiPlan, insert the 5.25" disk into your Amiga 5.25" drive, change directories in your spreadsheet to the 5.25" drive, and directly load the IBM format Lotus file into your spreadsheet. Let's make it more difficult: the IBM you used was an AT and the disk is a 720K disk. Let's toss in a twist: your 5.25" disk drive auto-configures (no mountlist entry; no mount command) and the Amiga thinks it is a normal Amiga 880K disk drive. Not only that, but it is a normal Amiga drive, will format a 5.25" disk as an Amiga disk, and will read and write it in the normal fashion.



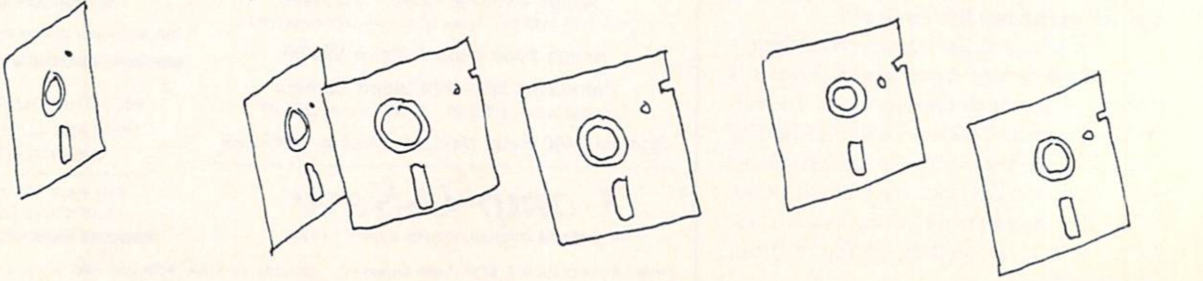
"What?", you ask. "Impossible!", you say. Not at all. This article will show you how to do it. All you need is two integrated circuits, some ribbon cable, a DB-23 connector (or you can cheat and cut down a DB-25, which is what I did), a 5.25" 80 track (96 track per inch) surplus disk drive, a 34 pin edge connector, a 4 pin Molex power connector, a momentary contact switch, an enclosure, some wire, and a power supply. If you want the IBM compatibility, you need to purchase CrossDOS from Consultron. This package is well worth the $30.00 retail price.

This article shows you how to take a surplus disk drive and build it into an auto-configuring Amiga drive. It might be a cheap external Amiga drive for someone (albeit with a non-standard media), or it is the best route if you need to import and export IBM files. I built it for that purpose and use it routinely on my Amiga at the office to move WordPerfect files back and forth. I am a project manager, and the "odd man out" since everyone on my team (except me) uses IBM PC's (with 5.25" drives). I have been offered an IBM PC, but I won't stoop that low.

The basic schematic for the auto-configuring interface to the Amiga is depicted in Figure One (page 54). On the left side of the figure, the pin numbers designate connections to the DB-23 connector which plugs into the Amiga, or the disk drive ahead of this one in the chain. On the right side of the figure are the pinouts for the connection to the 34 pin connector which plugs into the disk drive controller. The logic in between is quite simple; a 7402 OR Gate, a 7474 D Flip-Flop, and a handful of resistors.

The 5.25" drive does not have the hardware support needed to sense when a disk has been changed. The momentary-contact switch is how you fix this. Wire the switch as indicated, then punch the button when you change disks. It isn't elegant, but it works. The alternative, which is even less elegant, is to use the diskchange command whenever you change a disk.

The theory of operation is straightforward. When the Amiga is starting, it auto-configures by asserting and de-asserting the drive select line for each drive in succession, while not asserting the Motor On line and reading the state of the drive ready line when the drive select line is de-asserted. It asserts and de-asserts each drive select line 32 times in sequence. If you were to hang an oscilloscope on that line, at auto-configure time you would see a square wave with 32 periods. When the Amiga reads the drive ready line, it is checking for the existence of a drive and determining its type. If the drive ready line is inactive each time it is checked, the Amiga assumes that no drive is present. If the drive ready line is asserted each time it is checked, the Amiga assumes that a 3.5" 80 track drive is connected. If the line is alternately asserted and de-asserted when tested (a square wave with 16 periods over the course of the auto-config cycle), the Amiga assumes that a 5.25" 40 track drive is connected. Note that, since the Motor On line is not asserted, the drive does not run when all this is happening. On an A1000, this happens after Kickstart is loaded and before you get the request for Workbench. On the later Amigas, this happens before you get the request for Workbench.



Our auto-configure interface tells the Amiga that a 3.5" 80 track disk drive is connected. The fact that the drive is actually a 5.25" drive is totally unimportant, so long as the drive is an 80 track drive. I should point out that this is the interface you would use to connect a brand X 3.5" drive to the Amiga as well. I should also point out that only two OR gates and one 7474 are used; you could quite easily connect two disk drives using the one interface by just using the other gates that are available, or by using the remaining drive select line.

Building the interface is straightforward. Simply make sure that you don't create any solder bridges, and you connect all the wires to the right pins on the right connectors. When you attempt to interface to the 5.25" drive, the fun begins.

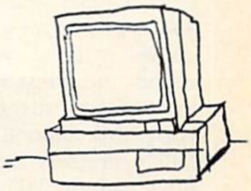
These drives are surplus and old. I purchased a full height unit built by Micro Peripherals. This drive and others of the same type (full height, 5.25", 80 track) that I examined all had two 14 pin DIP sockets located near the connector. One of these sockets is for a resistor terminator pack. On the drive that you purchase, that pack may or may not be installed. If it is installed, leave it there. The Commodore docs state that all lines that are connected to open collector drivers in the Amiga (pins 8-10 and 16-21) must provide 1K pull-up resistors. The resistor pack takes care of most of these pull-ups. You won't notice the absence of the pull-ups if you have another external drive connected because that drive provides pull-ups. However, you may encounter intermittent operation if you don't provide pull-ups and this drive is your only external drive.

The other DIP socket is for a jumper pack. This DIP socket will be the one that is mounted on the circuit board closest to the 34 pin edge connector. A jumper pack may or may not be mounted in this socket. You should be able to see some traces running from pins 10, 12, 14, and 16 (the drive select lines) to this DIP socket. Note that the even number pins are on top of the board, with pin 2 at the outer edge of the circuit card and pin 34 at the other end of the connector. The jumper configuration is, as you might imagine, critical. I had to play with the drive for quite a while (didn't have schematics) to get the jumper configuration correct. The configuration that worked on my drive is depicted in Figure Two (page 54).

The real catch is due to the fact that these drives have a solenoid to raise and lower the heads. You need to configure the jumpers so that (1) the drive is selected, (2) the motor starts when it is supposed to, and (3) the heads go up and down at the right time.

The existence of that solenoid places another constraint on this project. This drive MUST BE self-powered. DO NOT attempt to use the Amiga built-in power supply to drive this disk drive. If you do, and incur damage, I'm sorry but I warned you. The solenoid sucks 12 volt current. My drive draws about 335 mA at 12 volts. That's a bunch. Allowing for derating, you should use a power supply that can deliver about 700 mA at 12 volts. I never measured the 5 volt side, but I believe that a 7805 regulator would handle it easily. I would suggest that you purchase an appropriate power supply when you purchase your disk drive.

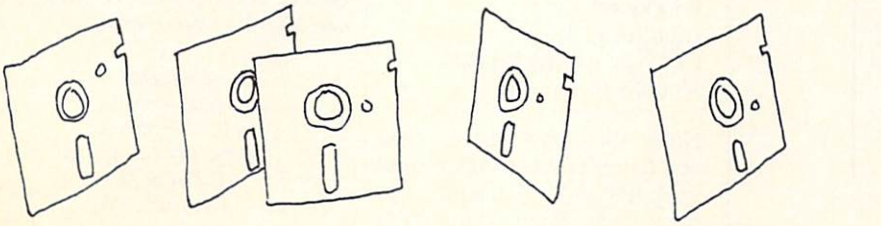
The connector to attach the power supply to the disk drive is a standard 4-pin Molex type connector. This connector is used on just about every disk drive in the known universe. If you buy a disk drive enclosure package with power supply (such as the Xetec unit) it should have the connectors provided and wired. If you scavenge a power supply (like I did) and piece it together, you need to know the pinouts for that connector. Simply, pin 1 is +12V, pins 2 and 3 are ground, and pin 4 is +5 volts.



On the subject of power supplies, there is one other Gotcha that you have to watch out for. When installing the 5.25" drive, you need to ensure that the drive chassis is grounded using the ground line on the 3-wire AC cord. You must also ensure that the signal ground (the 0 volt line out of the power supply) is NOT grounded to this chassis ground. The 0 volt line should be passed back to the computer using the ground pins of the DB-23 connector and must not be connected to the drive chassis ground. You may expect to encounter fireworks if you disobey this rule. Those fireworks may or may not damage your computer. If you try to ground the drive chassis through the DB-23, you will experience unreliable operation of the drive and may still have fireworks.

After the drive auto-configures and will format an Amiga disk, you will want to install CrossDOS in order to give yourself a transparent MS-DOS file system capability.

(continued)



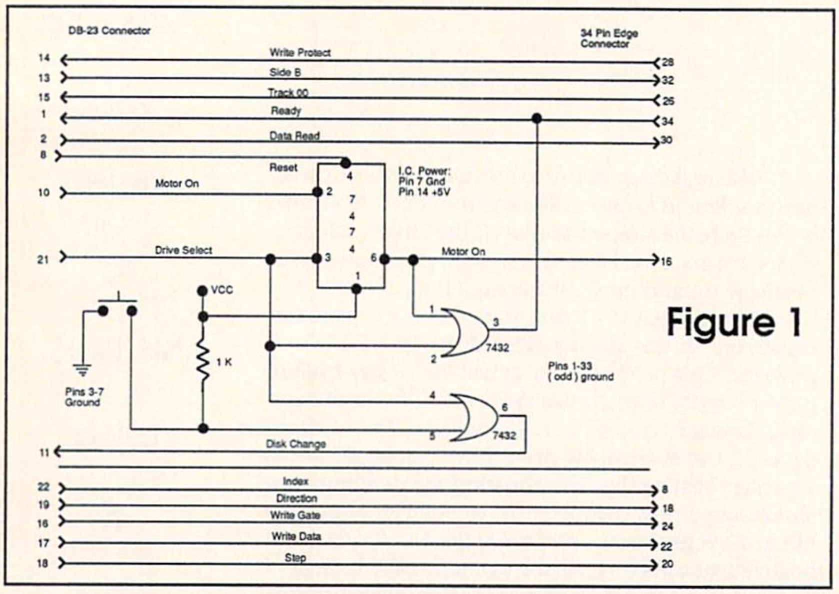


Figure 1

CrossDOS comes with a small manual detailing the workings of the file system and its installation. The disk includes an installation program which crashed on my machine, forcing me to install the system manually. However, this was no big deal. Just place the file mfm.handler in the Devs: directory, the file msdosfilesystem in the L: directory, and set up appropriate mountlist entries. Mount the MS-DOS handler when you need it and away you go. CrossDOS comes with its own mountlist, called mountlist.msdosFS, and the manual suggests that you copy this mountlist into your DEVS: directory, then mount your drive with the following:

```
Mount dI3: FROM devs:mountlist.msdosFS
```

You can do this if you want to, but I consider it unnecessarily cumbersome. I just copied the contents of mountlist.msdosFS into devs:mountlist, then I Mount di3: from my startup-sequence. Why fool with multiple mountlists?

CrossDOS is slick. It lets you handle IBM 360K or 720K 3.5" or 5.25" disks, as well as Atari ST disks. You may simultaneously have a drive defined as an Amiga drive and an IBM drive; which file system gets used depends upon how you refer to the drive. For instance, if you refer to drive df0:, the Amiga file system is used to read the internal drive. If you refer to drive di0:, the MS-DOS file system is used to read the internal drive. You even get Workbench Icons for the MS-DOS drives. However, if you have simultaneously defined a drive for both Amiga and MS-DOS, one of those icons will indicate that the disk is bad. If the disk in the internal drive is an IBM disk, you get the icon for that IBM disk, but you also get the icon df0:BAD. When dealing with our 5.25" drive, you get to see that df2: (or df3:) is bad when you are using it as an IBM drive.

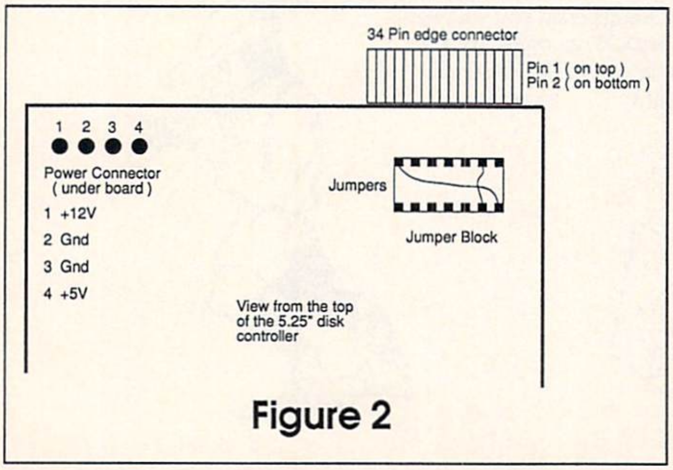


Figure 2

If you insert a 40 track (360K) disk in an 80 track drive, CrossDOS will double step the drive for you, so you can read or write the disk. This takes a special mountlist entry that is not well defined in the manual. Our 5.25" drive is useful as both an 80 track (720K) and a 40 track (360K) drive. The 80 track mountlist is correct as provided on the CrossDOS disk. The appropriate mountlist entry for the 40 track drive is as follows:

```
DI3: /*double step for
    40 track disk*/
Device   = mfm.device
Unit     = 2
Flags    = 1
Surfaces = 2
BlocksPerTrack = 9
Reserved = 1
Interleae = 0
/* SecOrg = 1 */
LowCyl = 0; HighCyl = 39
FileSystem = L:MSDOSFileSystem
Buffers   = 5
BufMemType = 0
Stack size = 4000
Priority = 5
GlobVec = -1
DosType = 0x4D444400
Mount = 0;
```

Note that my drive auto configures as df2:, so I call my 80 track IBM drive DI2: and my 40 track IBM drive DI3:. It is possible to simultaneously define DI2: and DI3:, although you can run into trouble and corrupt an innocent IBM disk by trying to write to dI2: when a 40 track disk is installed in the drive, and vice-versa. If your drive is not unit 2 (df2:) you must modify your mountlist entry appropriately, by setting the correct unit number.

You may run into trouble using the 80 track drive to write 40 track disks. The track width is, of course, narrower on the 80 track drive, so when it writes a 40 track disk each track is narrow. Some 80 track drives may therefore write a track that some 40 track drives cannot read. I have not encountered this problem with my drive, but it is a possibility.

CrossDOS is not bug-free, unfortunately. One of the problems is connected with the mountlist entry for 40 track disks used in 80 track drives. I called Consultron and spoke with the author of the package about that one. He told me what to do. At the same time I talked with him about problems I was having with Mformat, the MS-DOS format command that was provided with the package. He downloaded a new version to me on the spot, but it still does not work. In other words, I cannot format an IBM disk on my machine. No big deal; I just format the IBM disk on an IBM and use it on my machine. It would be nice if that command worked, however.

Generally, CrossDOS is a godsend to me. I had developed this interface for a 5.25" drive a couple of years ago, but tabled it because I didn't see a good way to take advantage of it. I purchased CrossDOS the instant I spotted it, dusted off my old interface and finished the job, and now I send files back and forth to and from IBM land in a totally transparent fashion. This has vastly improved the ease with which I can communicate at work. I just give them a disk in their format. No sweat. If you need to talk to IBM's from your Amiga (talk down to them, of course), then this is the best way that I have seen. Unless, of course, you have lots of bucks and can afford a bridge card.

CrossDos
Consultron
11280 Parkview
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Bridging the 3.5" Chasm

by Karl D. Belsom

One of the advantages of owning an Amiga 2000 with the A2088 Bridgeboard is having the ability to draw from two software pools. If the program isn't available for the Amiga at a reasonable price, it may be possible to find a similar program in the MS-DOS format. Another advantage is being able to bring home an MS-DOS diskette from work. There is just one restriction—the A2088 Bridgeboard only comes with a 5.25" floppy drive. After spending nearly $600 to get the A2088, it is difficult to justify buying an external 3.5" floppy drive dedicated to the MS-DOS side of the machine. A 3.5" floppy drive is part of the standard features of the A2000; however, AmigaDOS can't read the IBM formatted 3.5" disks. So what is done about MS-DOS files or programs on 3.5" format?

At first, the problem may seem trivial with an extremely simple solution (always obtain files on 5.25" format), but it really deserves deeper consideration. Just recently, I found a floorplan software package for the IBM that was only $15.00. After looking the software over, I noticed that I had picked up the IBM 3.5" version by mistake. Re-orienting myself, I located the same title in 5.25" format and almost fainted. The price was $50.00! I don't pretend to understand retail marketing, but I know a bargain when I see it. People who have 3.5" drives can buy this software at a 70% savings. Taking a gamble that the software would not be copy protected, I bought the 3.5" version. I was the proud owner of a piece of software that was unusable, but I got it cheap! Now this might sound like the ramblings of a sale-crazed shopper, but in reality an idea was beginning to form in the back of my mind. I own Dos-2-Dos from Central Coast Software. Armed with it and my own ingenuity, I set out to cross the 3.5" chasm.

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For those users who are not technically minded or would prefer to skip the details, here is what needs to be done: grab a copy of Dos-2-Dos, type in the MSCOPY script, and skip to the section of this article entitled "A Script for a Better Solution."

DOS-2-DOS

The first step toward the solution to my dilemma was Dos-2-Dos from Central Coast Software. This software allows the Amiga to copy files from MS-DOS (or Atari ST) 3.5" diskettes to an Amiga device. The software accomplishes this by taking complete control of one of the 3.5" floppy drives and making it respond like an MS-DOS drive. Once allocated, Workbench can no longer access the drive until Dos-2-Dos has ended. With this software installed, everything can be copied from an MS-DOS diskette to an Amiga device by using a command similar to the MS-DOS copy command. For example, if "DF1:" is allocated as the MS-DOS device, all the files on the MS-DOS diskette can be copied onto "RAM:" with the command "COPY DF1:*.* RAM:."

If the object of all this attention is an ASCII text file, this product can be an end in itself. Once the files are on the Amiga, they can be manipulated by programs such as ED or some other word or text processor. Later, it can be copied back to the MS-DOS diskette with a command similar to the previous one.

Dos-2-Dos is an excellent product, but it still has not accomplished the goal. Since the 5.25" drive is attached to the A2088, the Amiga does not recognize it as an I/O device, and Dos-2-Dos can't access the drive. While text and data files can be manipulated by the Amiga, the program files are useless unless we can copy them to the IBM side of the machine. Fortunately, Commodore has supplied us with a solution to this second problem.

AREAD

"AREAD" is an MS-DOS program that is included on the GW BASIC disk supplied with the Bridgeboard. This program will copy an Amiga file to an MS-DOS device connected to the Bridgeboard. Ordinarily, "AREAD" will attempt to translate Amiga characters into their MS-DOS equivalents. The "/b" option of the command will prevent this from occurring. Not only will this speed up the transfer, but the files that are being dealt with are already MS-DOS files and no translation is necessary.

Unfortunately, "AREAD" does not support wildcards. The command must be issued for each and every individual file. It might take a tremendous amount of "AREAD" commands to bring over all the files contained on a 720k MS-DOS diskette. An MS-DOS batch file might come in handy, but entering all the "AREAD" commands in a file would save no more time then typing them in at the prompt. It would be much nicer to have the computer create the "AREAD" commands.

TEACHING AMI MS-DOS

Using the output redirection feature of AmigaDOS, the output of the "LIST" command can be redirected to a disk file. In addition, the "LFORMAT" option in 1.3 allows for reformatting the output of the "LIST" command. Using these two features in conjunction, MS-DOS batch files can be written by the "LIST" command. The "LIST" command should look something like:

```
LIST >RAM:CONVERT.BAT FILES
LFORMAT="AREAD %S%S A:%S /B"
```

The "LFORMAT" parameter looks rather cryptic, but the explanation is really quite simple. The %S placeholders will be substituted by the path or the filename depending upon the number of them in the string. One will translate into the filename; two will translate into the path-name and filename; three will translate into pathname, filename, and filename; and lastly, four will become pathname, filename, pathname, and filename. In our example, if there is one file in the current directory by the name of "AUTOEXEC.BAT," and the current directory is "RAM:," the output produced by the list command will be "AREAD RAM:AUTOEXEC.BAT A:AUTOEXEC.BAT /B." Because %S occurred three times in the example, the first %S received the pathname, the second and third received the filename.

A SCRIPT FOR A BETTER SOLUTION

The procedure defined above is somewhat arduous and long-winded, because it is the actual procedure used to

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convert the floorplan software. After going through the procedure once and then writing it down for future reference, I realized the whole process could be placed into a script for ease and convenience. Here is how to use the MSCOPY script:

Place the script in the same directory as a working copy of Dos-2-Dos. Use the protect command to set the script bit. The format of the MSCOPY command is:

```
MSCOPY <msdosfilespec> <amiga-
dosfilespec> DRIVE <device>
[QUIET] [SCRIPT <msbatchfile-
name>]
```

An example might help clear this up a little more. To copy all the files from an MS-DOS 3.5" diskette in drive "DF1:" to "RAM:" and build an MS-DOS batch file to bring them across to the Bridgeboard, enter:

```
MSCOPY DF1:*.* RAM: DRIVE DF1:
SCRIPT T:CONVERT.BAT
```

Specifying the quiet option on the command will prevent Dos-2-Dos from echoing the names of the files as it copies. The script option is also not required. Only use it when an MS-DOS batch file is desired to bring the files over to the Bridgeboard.

Once the script is finished, all the files will be on the RAM disk and the MS-DOS batch file will be in the filename specified in the script option, in this case: T:CONVERT.BAT. Now that the MS-DOS batch file is built, the PC Window can be opened and the files transfered to a 5.25" floppy. Remember, "PCDisk" must be double clicked on before the "AREAD" command can be used.

Bring over the MS-DOS batch file with the command "AREAD T:CONVERT.BAT C:CONVERT.BAT." Notice that the "/B" option is not used. Because the batch file was created using AmigaDOS, conversion from Amiga characters to MS-DOS characters must be done. The batch file is placed on the "C:" drive because the "A:" drive will be busy receiving the files from the Amiga. If a hard disk is not available, set up a small RAM disk to hold the conversion batch file. When using the RAM disk method, be sure to copy the "AREAD" command to the RAM disk.

Change the working directory to the "C:" drive, insert a blank, formatted diskette in drive A, and type "CONVERT" at the command prompt. When Enter is pressed sit back and relax as the files are copied.

One last word of caution—it is important that the programs being converted to 5.25" format are not copy protected. Most copy protection techniques involve checking for an error on the original disk. Since the programs will not be residing on the same physical diskette, this kind of copy protection scheme prevents converted programs from executing.

Listing One

```
.KEY MSPATH/A,TO/A,DRIVE/A/K,SCRIPT/
K,QUIET/S
.BRA (
.KET )
.
****************************************
. * MSCOPY version 1.1
*
. * Written by Karl D. Belsom, June 1989
*
.
****************************************
ASK "Is MS-DOS 3.5 inch diskette
inserted in drive (SOURCE)?"
IF NOT WARN
    FAULT 226
    QUIT
ENDIF
ECHO "Copying..."
IF "(QUIET)" EQ "QUIET"
    D2D >NIL: (DRIVE) COPY
(DRIVE)(MSPATH) (TO) -R
ELSE
    D2D (DRIVE) COPY (DRIVE)(MSPATH)
(TO) -R
ENDIF
IF NOT "(SCRIPT)" EQ ""
    ECHO "Generating (SCRIPT)..."
    LIST >(SCRIPT) (TO) FILES
LFORMAT="AREAD %S%S A:%S /B"
ENDIF
QUIT
```

•AC•

Products Mentioned

A 2088 Bridgeboard
Commodore Business Machines, Inc.
1200 Wilson Drive
West Chester, PA 19380
(215) 431-9100
Price: $699.95
Inquiry #201

Dos-2-Dos V3.1
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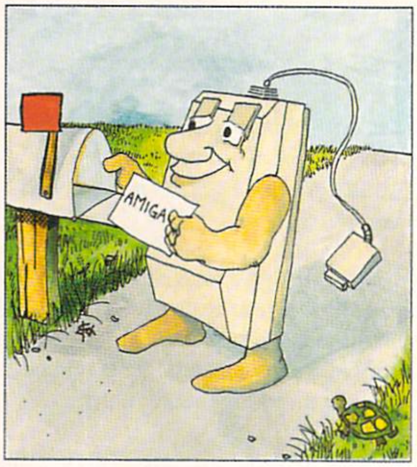
Inquiry #202

by Jeff Glatt

Handling Gadget & Mouse IntuiEvents

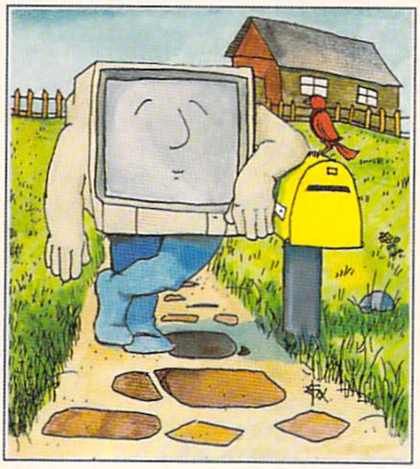


In the last article (AC V4.10), we added several gadgets to the Assembly listing: two proportionals, a string, and a boolean gadget. This month, additions include some handlers for the GADGETDOWN messages generated by the two proportionals (due to the GADGIMMEDIATE flag), the MOUSEMOVE messages generated by those props (due to the FOLLOWMOUSE flag), and the GADGETUP messages generated by all 4 gadgets (due to the RELVERIFY flag).

The functions implemented with these gadgets are: the prop gadget with the custom knob to print out a number within a range of 1 to 4; the prop gadget in the window border to adjust the red intensity of the background color; the string gadget to allow the user to enter text which will be printed at a certain position on the screen; and the boolean gadget to alternately print the words "ON" and "OFF".

WRITING GADGET_DOWN

The only two gadgets that will send an intuimessage with GADGETDOWN class are the prop gadgets, because the GADGIMMEDIATE flag wasn't specified in the structures for the other gadgets. When the user clicks the left mouse (select) button inside the select box for either gadget (I set the select box the same size as the gadget's imagery), a GADGETDOWN message will be sent to the window's UserPort by Intuition. So, in _main, the branch will be taken to E11 which calls the gadget_down handler. (Note that clicking the left mouse in a gadget's select box generates a GADGETDOWN instead of a MOUSEBUTTON intuimessage, not both.) Now, how can we determine which of the 2 gadgets caused the GADGETDOWN intuimessage? This is where the value, which is placed in the GadgetID field, is used. Register a2 will have the intuimessage's IAddress at this point, which for a GADGETDOWN (or GADGETUP) message contains the base address of the gadget structure which caused the event. In other words, a2 will contain the address of either myPotGadget1 or myPotGadget2.



The gadget ID is the WORD at an offset of 38 bytes from the base. I set myPotGadget1's ID to 0 and myPotGadget2's ID to 1. In the function, gadget_down, notice how the gadgetID was obtained to determine which of the 2 gadgets were clicked on. If myPotGadget1 was clicked on, then bit #0 of a variable, GadgetOn, will be set. If myPotGadget2 was clicked on, then bit #1 of GadgetOn will be set. This is so that I will know that any mousemoves received (while either bit is set) will have been generated by the user moving either gadget's knob (due to the FOLLOWMOUSE flag). Now, as soon as a MOUSEMOVE intuimessage is received back in _main, it is sent to the mousemove handler branching to E14. If either bit of GadgetOn is set, then the mousemove is the result of the user moving one of the props' knob. If neither bit is set, this MOUSEMOVE will be the result of the user simply moving the mouse about the window. These messages will be ignored. If the MOUSEMOVE is due to a gadget, which gadget needs to be determined, so that the PropInfo structure can be obtained.

The PropInfo structure contains fields which identify the position of the knob with respect to the container. For a gadget with the knob set to move left and right (FREEHORIZ) like myPotGadget1, the PropInfo field that should be examined is HorizPot. If the knob is moved as far to the left as possible, the field will be a zero. As the user moves the knob to the right, Intuition will increase this value up to 65,535 when it is fully right.

For myPotGadget1, we want to split the range from 0 to 65,535 into only 4 values (an ASCII 1, 2, 3, or 4). In order to convert this number into a value from 1 to 4, the HorizPot value is scaled. Since 4 different values are needed:

```
65,535/4 = 16383.75
```

Round the decimal portion of the result up since HorizPot can only be an integer. So, dividing the value in the HorizPot field by 16384, will always result in a number from 0 to 3. Then if 1 is added to this value, the desired range of 1 to 4 is obtained. This is an example of how the PropInfo knob position can be scaled, if the full 0 to 65,535 range is not needed. Note that if a FREEVERT gadget was being used, then the PropInfo field that would be examined is the VertPot field. Another note is the HorizBody field of myPotPropInfo1. Notice that value 16384 is placed in this field. If this field is not 0, Intuition will move the knob that far whenever the user clicks inside the gadget select box but NOT ON THE KNOB. To see how this works, click to either side of the knob in myPotGadget1. Notice that the knob can only be moved to one of 4 (65535/16384) different positions in this manner.

Finally, the value is converted to ASCII and is printed below the gadget. If the user holds the left mouse button down and continues moving the knob, the printed value will be continually updated to reflect the HorizPot position. This is because more MOUSEMOVE messages will be received, and GadgetOn bit #0 will still be set, causing the mousemove handler to obtain the HorizPot field, scaling the number between 1 to 4, and printing it out. (There is a more efficient method of handling MOUSEMOVES known as "collecting" them, but that topic will be left for a future discussion.)

For myPotGadget2, the VertPot field of this gadget's PropInfo will be used to scale the value which will be sent to a graphics library function, SetRGB4. At this point, an understanding of how the Amiga generates color is needed as well as how the graphics library routines like Text and Draw determine which color to render text and drawings.

There are 32 color registers (actually hardware addresses) inside the Amiga. Each register contains a WORD which represents the "tint" or "shade" of the color assigned to this register. By combining 3 colors: red, green, and blue in different intensities, a great number of secondary colors can be created. (For example, purple can be created by combining almost equal amounts of blue and green.) This WORD inside each color register specifies the amount of red, green, and blue that comprises its "shade". Various bits of the WORD in the color register represent the blue, green, and red intensities. See RKM Hardware manual, pg. 36 for details.

By setting these bits in various ways, one of 4,096 possible "shades" can be choosen for each color register. After setting the "shade" for each of the 32 color registers, these are the 32 maximum colors that can be displayed at one time on the screen. (HAM mode changes the values in each color register, WHILE the display is being created, so that it appears as if there are more than 32 color registers available.) The draw mode (i.e. JAM2, JAM1) and the pens (PenA, PenB, and PenO) are variables that are used by the graphics library. JAM2 means that the library uses 2 colors (registers) when drawing, or outputting text. JAM1 means only one register is used. When using 2 colors, in the Text routine for example, the foreground (letter) will be printed in one register's color, and the background beneath the letter will be in another register's color.

The register number that the library uses for the foreground is stored in PenA, and the register used for the background is stored in PenB. These variables are set with the library's SetAPen and SetBPen functions. Usually, PenB is set to color register #0 since this is the register that Intuition uses to draw the window background. That way, a different colored background doesn't appear behind the letter. If text were outputted with PenA = 1, then the color of the letters would be the "shade" of register 1. After printing, the WORD in register #1 can be changed, and this would change the color of anything drawn with PenA set to register 1.

The display is constantly being refreshed using a structure that tells which pixels are set to which of the 32 registers. If the WORD in the register is changed, then all the pixels "assigned" to that register are changed. Unfortunately, PenA cannot be set to any arbitrary register. Only a number of registers based on the depth of the window's screen are allowed to be used. Since the window was opened on the Workbench screen, the number of color registers is limited to 4 (0 to 3), and remember, PenB is set to register #0.

The value for myPotPropInfo2's VertPot is going to be used to change the red intensity of the background color (register 0). SetRGB4 allows the red, green, and blue intensities of a color register to be altered by passing these values separately in d1, d2, and d3. The range for an intensity is 0 to 15 with 15 being maximum. Three separate gadgets would be needed to allow the user to set the 3 intensities individually.

Also, the colors of the other 3 registers (Pen1, Pen2, and Pen3 in our Color menu item) could be changed. In this case, whatever was drawn using those pens would be affected. Note how the window's background changes as the prop gadget is adjusted in the window border. (In my call to SetRGB4, I am deliberately setting the green and blue intensities to the same values each time so that only the red intensity of color register 0 is being changed.) There is one consideration that must be made. SetRGB4 needs to be passed the address of the window's viewport, which can be obtained via a call to the function ViewPortAddress() of the Intuition library. Since this only needs to be obtained once, we'll add this call to the open_libs function of our program. At label B9 (before the draw mode and pens are set), add the following call:

```
;====Get the Window's ViewPort==========
    movea.l  MyWindow,a0
    ;IntuitionBase is in a6
    jsr      _LVOViewPortAddress(a6)
    move.l   d0,ViewPort
```

Since the intensity must be within 0 to 15, scale the VertPot value to this range.

```
  65,535/15 = 4369
```

(Note that I could have placed this value in myPotPropInfo2's VertBody field, so that when the user clicked to the side of the knob, it would move 1/15 of the height of the gadget. Because I left this field 0, clicking to either side of the knob does not cause it to move at all.)

When are bits #0 or #1 of GadgetOn cleared, so that mouse moves no longer have any affect on the printed range or background color respectively? When the user finally releases the mouse select button, Intuition will send a GADGETUP message (due to the RELVERIFY flag in the gadget structures). In _main, the branch to E17 will be taken and gadget_up handler will be called. Actually, all 4 gadgets have the RELVERIFY flag set, so a determination of which one was "unclicked" upon has to be made. In gadget_up, use the IAddress to obtain the gadgetID of the de-selected gadget. Note that myStringGadget and myBoolGadget have IDs of 2 and 3 respectively. If the ID is 0 or 1, clear the appropriate bit of GadgetOn. Now when the user moves the mouse, the mouse_move handler will do nothing.

For myStringGadget, the only message received is GADGETUP, because the only activation flag set is RELVERIFY. This occurs after the user has clicked on the gadget, perhaps typed in something, and then hit return. Intuition has counted the number of characters typed into myStringInfo's buffer (which is StrBuffer) and placed this count in myStringInfo's NumChars field. This is one of those fields maintained by Intuition and accessed at an offset of 16 bytes from the base of myStringInfo. By printing out this many characters of StrBuffer, what the user typed is displayed. This NULL-terminated string could have been used to specify a file to load from disk for example.

For myBoolGadget, GADGETUP is all that is received as well. Because I have set the activation flag TOGGLESELECT, each time that the user clicks the mouse select button on this gadget, Intuition will toggle bit #7 of the gadget structure's Flags field. The Flags field is the WORD at an offset of 12 bytes from the base of the structure. If this is SET, "ON" will be printed. If this is CLEAR, "OFF" will be printed. Notice how repeated clicks on myBoolGadget toggle the text. BOOL gadgets set up in this manner could be used to allow the user to turn certain features in the application ON or OFF depending on the state of the gadget's SELECTED flag (bit #7).

The very simple handlers that were installed to demonstrate how the user might process GADGETDOWN, MOUSEMOVE and GADGETUP intuimessages should present some ideas. Experiment with adding gadgets to set the green and blue intensities of the background color. (Store the scaled values of 2 more gadgets in variables called green and blue, and use these values in set_color.) Also, try adding some simple features that could be turned on and off via boolean gadgets.

Above, GADGETUP, GADGETDOWN and MOUSEMOVE events were processed when they were generated by gadgets. Now we will add a routine for MOUSEBUTTON intuimessages and how to do simple drawing into a window.

In order to receive MOUSEBUTTON events, they must be sent by setting the MOUSEBUTTON bit of the newWindow structure's IDCMP flags field before opening the window, or by calling Intuition's ModifyIDCMP() after the window is open. MOUSEBUTTON events are sent by Intuition when the user clicks the left (select) button ANYWHERE BUT IN THE SELECT BOX OF A GADGET. The intuimessage that Intuition sends has the class field = hex 8 (i.e. bit #3 SET). Furthermore, the code field of the message tells whether the user pushed the button down (68 hex) or let it up (E8 hex). Normally, the right mouse button is used by Intuition to display any menu, but if the RMBTRAP flag is set in the newWindow's windowFlags field (or used to modify the windowFlags field of an already opened window), then this button will generate MOUSEBUTTON events as well. With RMBTRAP, Intuition will no longer display the menu. Instead, the code field for a right mouse button event will be 69 hex for down and E9 hex for up. Since there is a menu in the program, the right button is used for displaying the menu, and at other times it is used for MOUSEBUTTON events. The RMBTRAP bit of the opened window's flags will have to be set/cleared.

Let's write a routine such that when the user pushes the left mouse button down, a freehand line will be drawn as the mouse is moved around the window. When the mouse button is released, the drawing will stop. This is a very common feature of paint programs. When the user pushes the mouse button down it will have to be detected, and a flag will have to be set indicating the mode is ON. As the user moves the mouse around, this will generate MOUSEMOVE intuimessages. Some code will be added to the mouse_move handler that checks to see if drawing mode is ON. If so, a line segment will be drawn from the point where the mouse used to be, to where the user has just moved it. Finally, when the user releases the select button, we'll turn the drawing mode flag OFF.

When the user pushes the select button down, the IDCMP loop in _main (of the original article's listing) will branch to E13 which sends the user to the button routine. In this routine, check the code field (passed in d5) to see whether this is a left mouse button up or down. If up, SET bit #0 of the variable draw_mode. If down, CLEAR bit #0. I've also added detection of right mouse button up or down and SET or CLEAR bit #1 of draw_mode accordingly. Remember that this code will never be executed unless the RMBTRAP flag of our window's windowFlags field (bit #16) is SET. Because of what is done in the mouse_move handler, when the right button is released, the value of PenA is also restored. Note that the current MouseX and MouseY positions are saved at the time the user depresses the mouse button. (These values were passed in registers d3 and d2.)

When any MOUSEMOVE messages are received while bit #0 of draw_mode is SET, the mouse_move handler should get the new MouseX and MouseY positions, draw a line from the previous values, and store the new values where the previous values used to be. This insures that a line is drawn from the last position to the new position. At label M5 the mouse_move function, add the following code:

```
;=======CHECK FOR DRAWING MODE ON=====
M5  Btst.b   #0,draw_mode
    beq.s    M9               ;it's off
  ;-Put our drawing pen at the previous mouse position
M6  move.w   mouseX,d0
    move.w   mouseY,d1
    movea.l  RastPort,a1
    movea.l  _GfxBase,a6
    jsr       _LVOMove(a6)
  ;-Draw a line to the new mouse position
M7  move.w   d3,d0
    move.w   d2,d1
    movea.l  RastPort,a1
    ;_GfxBase still in a6
    jsr       _LVODraw(a6)
  ;-Store the new mouse position as previous
    move.w   d3,mouseX
    move.w   d2,mouseY
M10 rts
;======CHECK FOR RIGHT MOUSE======
M9  Btst.b   #1,draw_mode
    beq.s    M10              ;not pushed down
  ;-Set PenA to our background color register
    moveq   #0,d0             ;register 0
    movea.l  _GfxBase,a6
    movea.l  RastPort,a1
    jsr       _LVOSetAPen(a6)
  ;-Now draw this "eraser" line
    bra.s    M6
```

At M5, check to see if the left mouse button is down. If so, fall through to label M6 where the drawing pen (PenA) is moved to the previous position of the mouse. Those mouse coordinates were stored at the variables mouseX and mouseY. Next, using the graphics library's Draw function, pass the new mouse X and Y positions that are in d3 and d2. This function draws a line from where PenA is, to the coordinates passed to Draw using the color that is in PenA's color register (one of 32 hardware registers). Finally, store the new mouse position where the previous X and Y co-ordinates were stored because when we handle another MOUSEMOVE message, these will be the previous co-ordinates. Detection for right mouse button has also been added (again, useless without RMBTRAP) and if down, change PenA to the background color (register #0) via SetAPen(). In this way, wherever the user moves the mouse, a line will "erase" over the old design. Unfortunately, when the user releases the right button, PenA has to be reset to whichever pen number was previously selected (in the Color menu item). This value was saved at the variable, currentPen when the pen color in do_color was initially set.

Now, in the button function, PenA is restored when the user finally releases the right mouse. The only remaining problem is adding a feature whereby the user can set-up the right mouse for menu operations, or for the erasing function. Since there is a BOOLEAN gadget in the window, this will be used to toggle the window's RMBTRAP bit on and off. When the BOOL gadget is off (de-selected state, as it is when the window is first opened), the RMBTRAP bit is OFF. When the user selects the BOOL gadget ("ON"), then go inside the opened window structure to the windowFlags field (the LONG at an offset of 24 bytes from the structure's base), and set the RMBTRAP bit (#16). Add the code to the end of the gadget_up routine to do this with the boolean gadget.

```
 ;-Check whether the BoolGadget is ON or OFF
U4  movea.l  MyWindow,a1           ;the base of the window
    move.l   24(a1),d0             ;get current windowFlags
    move.w   myBoolGadget+12,d1
    btst.l   #7,d1
    bne.s    U6
U5  lea      OFF,a0
    Bclr.l   #16,d0     ;turn RMBTRAP off
    bra.s    U7
U6  lea      ON,a0
    Bset.l   #16,d0     ;turn RMBTRAP on
U7  move.l   d0,24(a1)  ;store new windowFlags
    moveq    #3,d0
    movea.l  RastPort,a1
```

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```
    jsr       _LVOText(a6)
U8  rts
```

Note that changing the PenA color register (via the Color menu item) affects the color that the graphics library's Draw routine uses when the left mouse button is depressed.

This very simple addition to the program demonstrates using the mouse to control drawing into the window. It can certainly be improved, since there is no check to see if the user is drawing over any of the window's gadgets or even the window border. There are also quicker addressing modes and optimizations that can be done to the example listing, but they will be left for your experimentation.

Listing One

```
 SECTION GadgCode,CODE

; Replacement handlers for the dummy handlers in the first
article.

;+++++++++++++++++++++++++++++++++++++++++++++++++
; For now, we just recognize the following intuimessages, but
we only
; call a dummy routine. Later, a useful handler can be devised
for each.
button:
rawkey:     rts
```

```
    XREF _LVOViewPortAddress,_LVOSetRGB4,_LVODraw

    XDEF mouse_move
mouse_move:
 ;-Is either Prop gadget being used?
M0  move.b   GadgetOn,d0
    beq.s    M5
 ;-Determine which gadget, and get the appropriate PropInfo
M1  Btst.l   #1,d0
    bne.s    is2          ;must be myPotGadget2
;==========Handle myPotGadget1============
  ;-move to where we print the value
M2  move.l   #312,d0
    move.l   #178,d1
    movea.l  RastPort,a1
    movea.l  _GfxBase,a6
    jsr      _LVOMove(a6)
  ;-Scale the HorizPot value
M3  moveq    #0,d0
    move.w   myPotPropInfo1+2,d0 ;HorizPot field
    divu     #16384,d0           ;scale it 0 to 3
    addq.b   #1,d0               ;1 to 4
    add.b    #'0',d0             ;convert to ascii
 ;-Print out the scaled value
M4  lea      ScaledValue,a0
    move.b   d0,(a0)
    moveq    #1,d0
    movea.l  RastPort,a1
    jsr      _LVOText(a6)
M5  rts
;========Handle myPotGadget2============
  ;-calculate the red value (0 to 8)
is2 moveq    #0,d1
    move.w   myPotPropInfo2+4,d1 ;VertPot field
    divu     #4369,d1
    move.w   d1,red              ;store it
    bra.s    set_color

    XDEF  set_color
set_color:
    movem.l  d2/d3,-(sp)         ;save d2 and d3
  ;-set green and blue to defaults
    moveq    #5,d2               ;some green tint
    moveq    #14,d3              ;more blue tint
  ;-get our red value
    move.w   red,d1
    moveq    #0,d0               ;color register #0
    movea.l  ViewPort,a0
    movea.l  _GfxBase,a6
    jsr      _LVOSetRGB4(a6)
    movem.l  (sp)+,d2/d3         ;restore d2 and d3
    rts

      XDEF gadget_down
; IAddress passed in a2. The only 2 gadgets which send
GADGETDOWN messages
; are myPotGadget1 and myPotGadget2 which I have set up with
IDs of 0 and
; 1 respectively.
gadget_down:
   move.w   38(a2),d0   ;get the gadgetID
   Bset.b   d0,GadgetOn ;set the corresponding bit
 ;-If myPotGadget1, then branch to print out the value
 ;  in case the user just clicks to the side of the knob
 ;  but doesn't move the mouse.
   move.b   d0,d1
   beq      M2
   rts

      XDEF gadget_up
; IAddress passed in a2.
gadget_up:
    move.w   38(a2),d0   ;get the gadgetID
 ;-Is this one of the props?
U0  move.w   d0,d1
    subq.w   #2,d1       ;faster than cmpi.w #2,d0
    bcc.s    U1
 ;-Stop handling mousemoves
    Bclr.b   d0,GadgetOn
    rts
 ;-Is this myStringGadget?
U1  bhi.s    U3          ;must be myBoolGadget
 ;-Print the user entered text
U2  moveq    #127,d0
    moveq    #20,d1
    movea.l  RastPort,a1
    movea.l  _GfxBase,a6
    jsr      _LVOMove(a6)
    lea      StrBuffer,a0 ;where the text is
    moveq    #0,d0
    move.w   myStringInfo+16,d0  ;NumChars (not inc NULL)
    movea.l  RastPort,a1
    jsr      _LVOText(a6)
    rts
 ;-Handle the BoolGadget
U3  moveq    #38,d0
    move.l   #152,d1
    movea.l  RastPort,a1
    movea.l  _GfxBase,a6
    jsr      _LVOMove(a6)
 ;-Check whether the BoolGadget is ON or OFF
U4  move.w   myBoolGadget+12,d1
    btst.l   #7,d1
    bne.s    U6
U5  lea      OFF,a0
    bra.s    U7
U6  lea      ON,a0
U7  moveq    #3,d0
    movea.l  RastPort,a1
    jsr      _LVOText(a6)
U8  rts
 SECTION GadgData,DATA
 ;-Additional data for the program
GadgetOn        dc.b 0
ScaledValue     dc.b 0
ViewPort        dc.l 0
ON              dc.b 'ON '
OFF             dc.b 'OFF'
red             dc.w 0
```

Listing Two

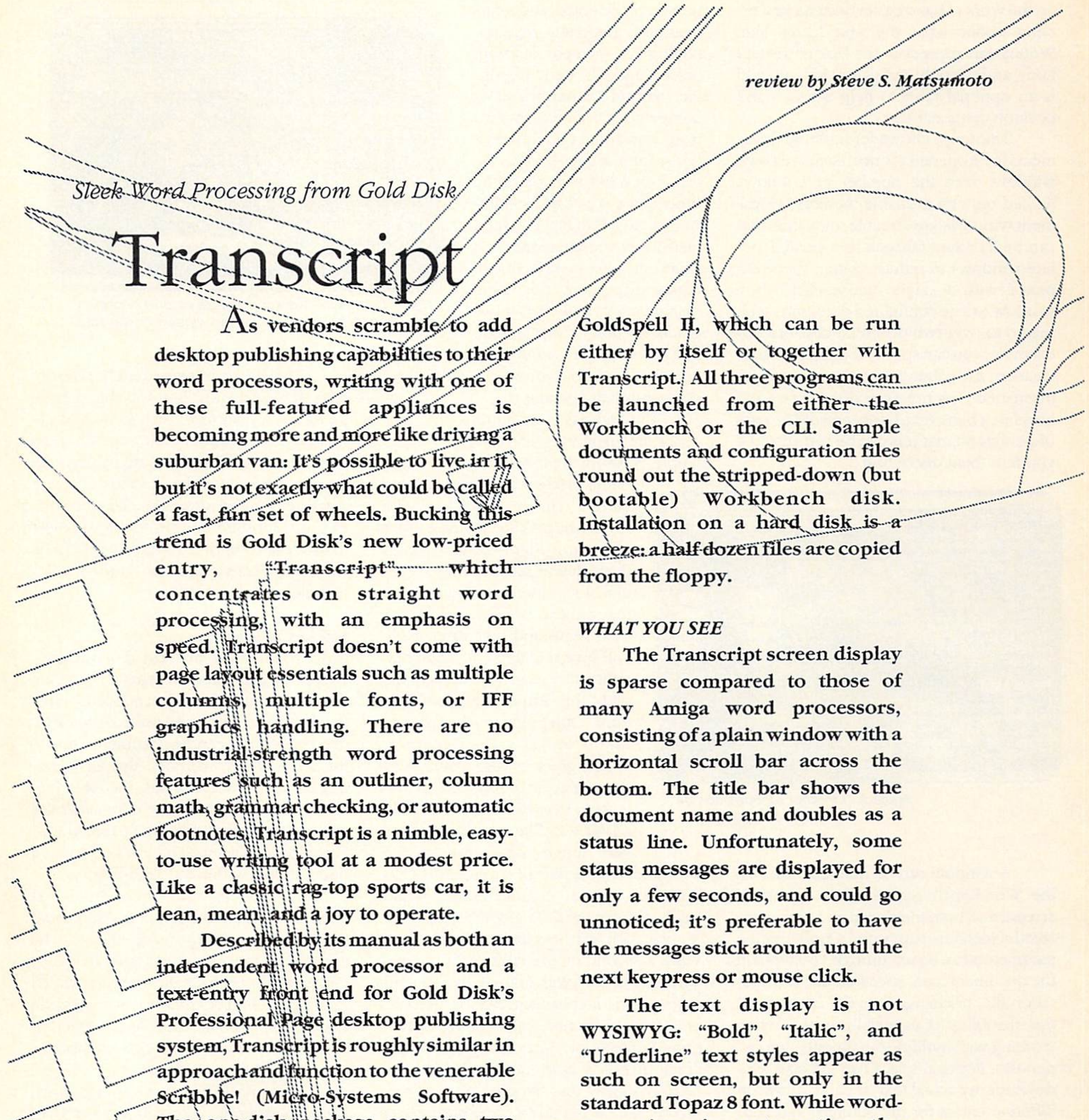
```
  SECTION drawcode,CODE
;passed the Code in d5, MouseX in d3, MouseY in d2
;passed the Code in d5, MouseX in d3, MouseY in d2
    XDEF button
button:
   ;-store mouseX and mouseY
    move.w  d3,mouseX
    move.w  d2,mouseY
    subi.b  #$68,d5  ;Right mouse down?
    beq.s   RMD
    subq.b  #1,d5    ;Left mouse down?
    beq.s   LMD
    sub.b   #$7F,d5  ;Right mouse up?
    beq.s   RMU
  ;-Must be Left mouse up
    bclr.b  #1,draw_mode
  ;-restore PenA
    moveq   #0,d0
    move.b  currentPen,d0
    movea.l _GfxBase,a6
    movea.l RastPort,a1
    jsr     _LVOSetAPen(a6)
    rts
  ;-Left down
LMD bset.b  #1,draw_mode
    rts
  ;-Right down
RMD bset.b  #0,draw_mode
    rts
  ;-Right up
RMU bclr.b  #0,draw_mode
    rts

  SECTION drawdata,DATA
mouseX     dc.w 0
mouseY     dc.w 0
draw_mode  dc.b 0
currentPen dc.b 1
```

•AC•

review by Steve S. Matsumoto

Sleek Word Processing from Gold Disk

Transcript



As vendors scramble to add desktop publishing capabilities to their word processors, writing with one of these full-featured appliances is becoming more and more like driving a suburban van: It's possible to live in it, but it's not exactly what could be called a fast, fun set of wheels. Bucking this trend is Gold Disk's new low-priced entry, "Transcript", which concentrates on straight word processing, with an emphasis on speed. Transcript doesn't come with page layout essentials such as multiple columns, multiple fonts, or IFF graphics handling. There are no industrial-strength word processing features such as an outliner, column math, grammar checking, or automatic footnotes. Transcript is a nimble, easy-to-use writing tool at a modest price. Like a classic rag-top sports car, it is lean, mean, and a joy to operate.

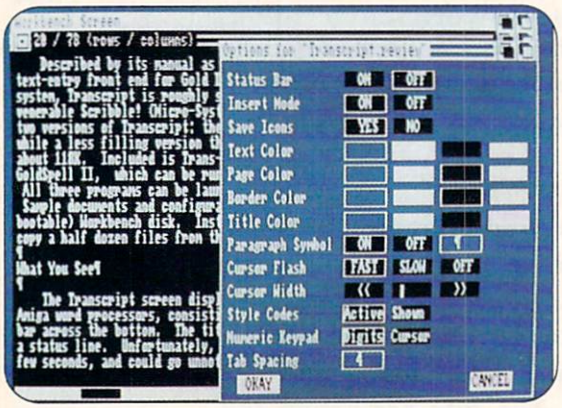
Described by its manual as both an independent word processor and a text-entry front end for Gold Disk's Professional Page desktop publishing system, Transcript is roughly similar in approach and function to the venerable Scribble! (Micro-Systems Software). The one-disk package contains two versions of Transcript: the full version occupies about 167K of memory, while a less filling version that omits the printing capabilities occupies about 118K. Included is "Trans-Spell", a spelling checker based on Gold Disk's GoldSpell II, which can be run either by itself or together with Transcript. All three programs can be launched from either the Workbench or the CLI. Sample documents and configuration files round out the stripped-down (but bootable) Workbench disk. Installation on a hard disk is a breeze: a half dozen files are copied from the floppy.

WHAT YOU SEE

The Transcript screen display is sparse compared to those of many Amiga word processors, consisting of a plain window with a horizontal scroll bar across the bottom. The title bar shows the document name and doubles as a status line. Unfortunately, some status messages are displayed for only a few seconds, and could go unnoticed; it's preferable to have the messages stick around until the next keypress or mouse click.

The text display is not WYSIWYG: "Bold", "Italic", and "Underline" text styles appear as such on screen, but only in the standard Topaz 8 font. While word-wrapping is automatic, the "margins" are on the edges of the window, not the specified margins for the hardcopy printing. On the other hand, the advantage of the uncluttered look of Transcript is that it makes concentrating on the work at hand easier, instead of worrying about what the text looks like. Writers can appreciate the lack of distractions, and the only layout tool I would add is an optional ruler to help set tabs and position columnar text.

Transcript allows for multiple documents to be opened at once, each in its own window, with the number of windows limited only by available memory. Document windows are sizeable, movable, and can be iconified (shrunk to a small, icon-like window) to reduce clutter, then reopened with a single mouse click. Each window can be configured differently with regard to over two dozen parameters. For example, you can specify the window size, location, and colors; tab stops; overstrike or insert mode; even the size of the cursor and how fast it blinks can be specified! The end-of-paragraph markers can be surpressed if you find them distracting.



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What You See¶
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    The Transcript screen displ
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bar across the bottom.  The tit
a status line.  Unfortunately,
few seconds, and could go unnot
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```
Status Bar         ON      OFF
Insert Mode        ON      OFF
Save Icons         YES     NO
Text Color
Page Color
Border Color
Title Color
Paragraph Symbol   ON      OFF     ¶
Cursor Flash       FAST    SLOW    OFF
Cursor Width       <<      |       >>
Style Codes        Active  Shown
Numeric Keypad     Digits  Cursor
Tab Spacing        4
```

Figure 2: Transcript windows can be customized to your tastes.

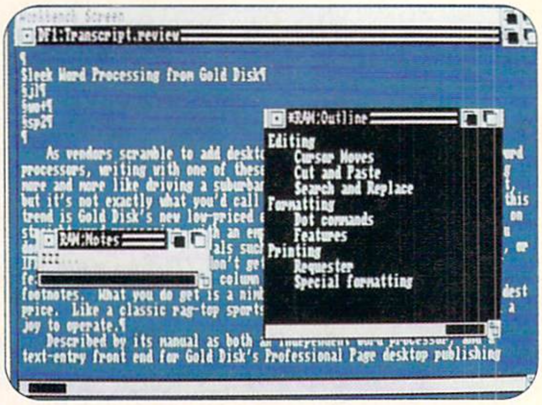
A window can be opened either on the Workbench screen or on a custom screen, and both interlaced and non-interlaced screens are supported. Configuration parameters can be set through Tooltypes in the document icon, specified in a configuration file, or changed via CLI options. All this flexibility is especially useful when working with multiple documents simultaneously. For example, I use full-size windows for my actual text, small windows in different colors for my outlines, and half-size windows in another set of colors for my notes. The different window sizes and colors help me keep everything straight.

EDITING

As a touch-typist, I place a high premium on fast keyboard operations, and Transcript is the smoothest, least obtrusive writing tool I've ever used. Text entry is paragraph-oriented, and reformatting is automatic with text editing or screen resizing. Screen updates are brisk; unlike many of Transcript's major competitors, it should have no trouble keeping up with a fast typist (or a trigger-happy editor). Good use is made of the function keys as well as Right-Amiga, CONTROL, ALT, and SHIFT key combinations for a small but judicious selection of cursor movement, document management, and editing operations. Those who prefer the mouse will find everything equally accessible through menus and click-and-drag operations.

Cut-and-paste operations in Transcript are especially convenient; for example, pressing Right-Amiga-E deletes the entire sentence containing the current cursor position, while Right-Amiga-R deletes the current paragraph. Right-Amiga-P pastes the deletion back. While a general block-oriented cut-and-paste mechanism is provided, those who write and edit extensively will love the ability to rearrange entire sentences and paragraphs with the Amiga-key combinations. Other nice touches are the Right-Amiga-? Combination, which gives a word count, and the ability to define up to ten custom macros bound to SHIFT-CONTROL-F key combinations. A very interesting feature is the ability to bind a pair of macros to CONTROL-left-mouse combinations. While holding down the CONTROL key, the first mouse click will invoke the first macro, while a second mouse click within a two-second interval will invoke the second macro. This mechanism can be used to greatly simplify repetitive editing operations. For example, in deciding that a witty article needs a little more boldface, the "start boldface" and "stop boldface" commands can be bound to the mouse clicks while zipping through the text.

Another useful aid to editing is the fact that the embedded codes that control style changes can be made visible. This happens throughout the document, whereas in some word processors the visibility of each style change has to be toggled individually, which is far less convenient for the purposes of editing.



```
¶
Sleek Word Processing from Gold Disk¶
.jl¶
.wm+¶
.sp2¶
¶
    As vendors scramble to add deskt                 word
processors, writing with one of these                g
more and more like driving a suburbar                t,
but it's not exactly what you'd call                 this
trend is Gold Disk's new low-priced e                on
st                 h an en                           u
d                  als suc                           , or
II                 on't ge
fe                 column
footnotes.  What you do get is a nim                 dest
price.  Like a classic rag-top sports                a
joy to operate.¶
    Described by its manual as both
text-entry front end for Gold Disk's Professional Page desktop publishing
```

```
Editing
    Cursor Moves
    Cut and Paste
    Search and Replace
Formatting
    Dot commands
    Features
Printing
    Requester
    Special formatting
```

Figure 1: A look at Transcript's multi-window capability in action. Note the iconified window on the right.

The search and replace functions are fairly standard and allow specifications of forward or backward searches, replacements with or without asking you first, and case sensitivity. Search strings can include Transcript's style codes, and the question mark can be used for single-character wildcarding. Substitutions are fast: it took less than five seconds to substitute "xyz" for all 422 occurrences of the word "the" in a 28K text file.

SPELL CHECKING

To minimize memory requirements, the spelling checker is a separate program that can be loaded in when needed. Trans-Spell can also be run by itself to check individual words or entire documents. And to further conserve memory, the dictionary can be left on disk instead of copied into RAM; this allows both the editor and the spelling checker to fit into a 512K Amiga. Once loaded, Trans-Spell can be accessed directly from within the Transcript.

The spelling of a single word or text from the cursor to the end of the document can be checked. Suggested spellings can be asked; clicking on one of these will replace the mistake. Custom dictionaries, which allow for addition or removal of acceptable spellings, can be defined. As for speed, it took 75 seconds to re-check a previously-corrected 4700-word document.

Trans-Spell has some minor problems. For example, it sometimes trips over contractions, such as "didn't." Another problem is the split personality of the standard spelling dictionary: the British spellings "colour" and "centre" are identified as misspellings—although they are spelled that way on some of the menus!—whereas, the equally British "defence" and "metre" are judged correct (maybe such divided loyalties are to be expected in a

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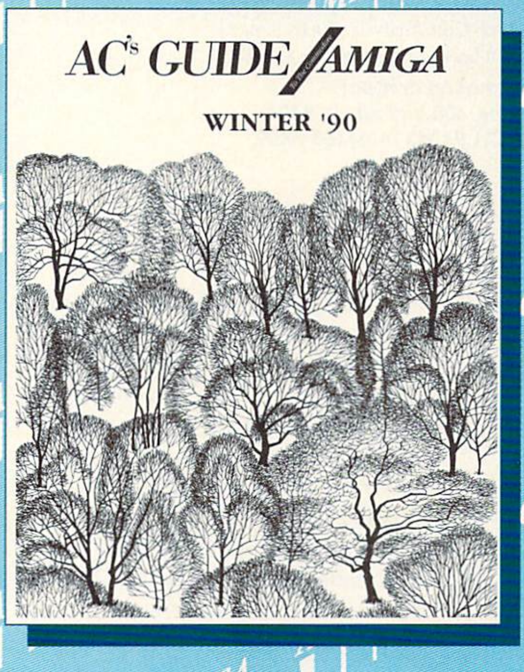

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Canadian product). However, the dictionary also thinks "misspellings" is wrong, and adds insult to injury by suggesting the erroneous "mispellings".

FORMATTING

To control formatting, Transcript uses a small set of embedded commands, similar to the "dot" commands in WordStar, Scribble!, and the old "roff" text formatters. These commands control the margins, justification, header and footer definitions, and pagination. Margins, headers, and footers may all be defined differently for left and right pages, if desired. Page numbers can be placed anywhere in the headers and footers, but only Arabic numerals are supported. The formatting may be fine-tuned by specifying hard spaces (inter-word spaces where line-breaks should not be placed) and soft hyphens (places where it is OK to break a word for hyphenation). In keeping with Transcript's non-graphic orientation, there are no commands for drawing lines and boxes, or changing point sizes.

Although it lacks conveniences such as vertical centering of text and automatic numbering of section headings, Transcript does provide a number of useful sophistications, including relative and hanging indents, conditional page breaks, and control of widows and orphans. Relative indents are margin changes that are specified as offsets from the current margins, rather than from the edges of the paper. Hanging indents are often used when defining terms:

Author: Underpaid, overworked, outnumbered defender of the English language. Endangered species. See also "Amiga Programmer".

Conditional page breaks are commands that start a new page if there is less than a specified amount of room left on the current page. Widows and orphans are those annoying cases where the first or last line of a paragraph gets stranded by itself at the bottom or top of a page.

The formatting capabilities provided are very well chosen; there is no feature here that I would have given up in favor of something else. However, many veterans of other word processors will no doubt find a favorite feature missing. In future versions, I'd like to see Gold Disk continue to add a few formatting commands carefully selected from the time-tested WordStar or UN*X nroff repertoires.

PRINTING

Print output is controlled by a print requester that allows you to specify margin setting, line spacing, automatic hyphenation, the print destination (screen, disk, or printer), and which pages to print. For simple documents, the embedded formatting commands do not have to be used; the requester may provide all the control needed over the formatting. Automatic hyphenation is a pleasant surprise, since this feature is usually found only in high-end word processors. Another rare but useful feature is the ability to print only every other page, which simplifies printing double-sided documents.

Transcript uses the Workbench printer drivers and Preferences settings, and the latter can be overridden via the print requester. Special control characters for the printer may be embedded directly into a "Transcript" document, allowing partial access to special features the printer may have that are not accessed by Transcript's formatting commands and text style codes. I say "partial access" because Transcript will simply pass the control characters on to your printer; since it doesn't know what they do, it won't be able to adjust text formatting to compensate accordingly. This is fair enough, since many word processors don't permit embedded codes at all.

A page preview mode analogous to the one in Scribble! allows previewing of fully formatted output before it is formatted. In the preview mode the mouse can be used to scroll vertically through each page image; for documents wider than the screen, horizontal scrolling is provided. This is useful for checking page breaks and hyphenations, but will not be 100% accurate if special printer escape sequences have been used.

There are two aspects of the page preview mode that I would like to see improved in the future: there is no way to back up to a previous page, and there are also no provisions for switching back and forth between previewing and editing. The latter feature would make it much more convenient to fix errors revealed by the preview.

Mail merge is provided in a simple form that lacks the capability to control merges by testing conditions (e.g., extracting customers in a certain city). There is also a facility for generating a simple index which, unfortunately, is case-sensitive; for example, if the word "printer" is tagged for indexing, occurrences of the form "Printer" will not be included. It is easy to see the need for case-sensitivity; for example, suppose that "Printer" was someone's name. Still, there ought to be a way to turn off case-sensitivity when it's not wanted.

COMPATABILITIES

Transcript multitasks nicely and, after grinding out almost 200K of text with it, I have yet to visit the GURU. Almost any document can be loaded into Transcript, but of course it will not recognize the formatting codes used by other word processors. Straight ASCII files can be loaded, but since line-feed characters mark the end of the paragraphs in Transcript, each line becomes a separate paragraph. Fortunately, the "join lines" command will merge lines back together. Using this technique, I imported a 28K file from another word processor into Transcript in less than thirty seconds on the first try. Conversely, the "separate lines" command will add a line-feed to the end of each screen line; when used with the "normal text" command, which removes embedded style change codes, this allows Transcript documents to be ported straight in ASCII. Converting that 28K file back to an ASCII file took only 3 seconds.

DOCUMENTATION

The 80-page manual is concise and generally clear, but more examples and figures would be helpful. In particular, I'd like to see a diagram illustrating how the various formatting parameters relate to the various margins on the page. There is a good table of contents and a usable index. Some last-minute features that didn't make it into the manual are described in a ReadMe file on the disk.

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There's not much of a tutorial—only two pages—but it's enough to get started, and the first few chapters appropriately cover the essentials of file management, cursor movements, and editing. I found it simple enough to read the manual straight through in two leisurely evenings, but Gold Disk could help those new to word processing by placing the chapter on printing much earlier in the manual, while pushing the relatively esoteric chapter on configuration parameters further back.

SUPPORT

Gold Disk offers a 30-day warranty on the disk, and there is no copy protection on the disk or in the program itself. Registered users are promised "free bug fixes," and no time limit on these fixes are stated. A phone number for technical support from 9AM to 5PM ET is provided in the manual, but it's in Ontario, Canada and is not toll-free.

SUMMARY

As a way to prepare text for a desktop publishing system, or as a straight word processor for professional writers who don't need elaborate text formatting, Transcript makes a lean, efficient writing tool. Its prime virtues are speed and unobtrusiveness; the fast response, clean screen display, and well-designed keyboard commands assist in writing without intruding on it. The lack of IFF graphics support will disappoint those who want basic word processing with a little desktop publishing thrown in. However, if graphics or expensive bells and whistles are neither desired nor needed, Transcript offers top performance at a bargain price.

•AC•

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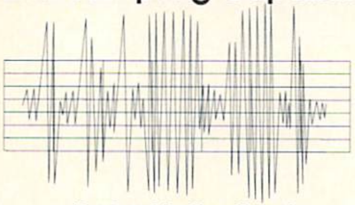

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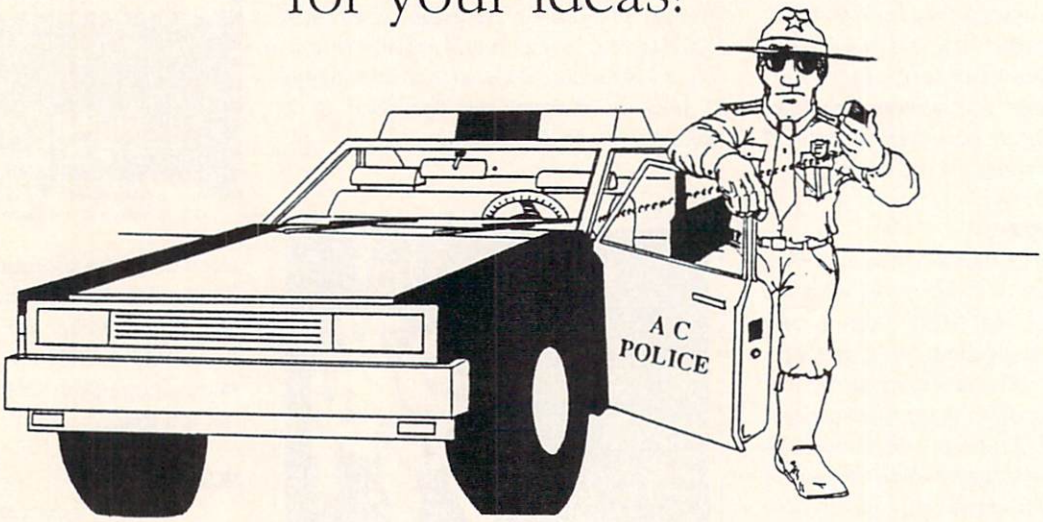

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A Hands-on Review

The Amiga 2500/30

by Lonnie Watson

Ever since I bought my first Amiga, I have longed for the day when I would be able to perform such feats as ray trace a 320 x 400 HAM picture in a few minutes! Commodore really has done a great deal in the past to provide the Amiga owner with methods for increasing their system's capabilities, as well as improving performance. Their newest endeavor in this arena is dubbed the 2500/30.

INTRODUCING...

Billed as the Amiga 2500/30 it is, in fact, a base Amiga 2000, with several add-on pieces. The first of these is Commodore's new 2630 coprocessor card. This little gem (which is also available separately for current 2000 owners) fits neatly into the coprocessor slot of a standard Amiga 2000 computer. Upon power-up the Amiga detects the presence of this card and disables the regular 68000 processor that is on its motherboard, allowing the 2630 card to take over. The 2630 is really several major components fitted into one expansion board. The first, and perhaps most important component is the Motorola 68030 Microprocessor. Also on board (no pun intended) is the Motorola 68882 Math Coprocessor. Last, but not least, there are 2 megs of 32-bit RAM.

32-BIT RAM

Currently, the RAM that comes on a standard Amiga 2000 is configured to be read by the custom graphics chips (Agnus, Denise, Paula, and Gary) in addition to the regular 68000. This memory is set up to be 16 bits wide. Any normal memory that is inserted into the system via any standard expansion card is also 16 bits wide.

The 68030 is a 32-bit processor, as is the 68020 (standard in the 2500). A 32-bit processor can "talk" to memory twice as fast as a 16-bit processor by communicating in pieces that are twice as large. That is, information can be shared in 32-bit groups of data instead of 16-bit groups. There are a number of accelerator boards that are available with both 68020s and 68030s that offer lower prices at the expense of having no 32-bit RAM. The result is a fast processor—but one that must slow down and divide all communication with memory by two. What this means is that each 32-bit piece of data must be broken in half and fed to and from memory separately. This results in system operation which is ultimately much slower than the speed of the processor would suggest. The 2630 card comes complete with 2 megs of 32-bit RAM. This memory is automatically added to the system's free memory pool upon power-up and allows the 68030 to operate at its full potential. There are also provisions on the 2630 board to add an additional 2 megs of 32-bit memory. The manual that comes with the 2630 card also references two expansion connectors on the 2630 board which allow memory expansion above this 4-meg ceiling. The manual states that this memory expansion capability is currently unused.

25MHz!

Another advantage of the 2630 board is the fact that the 68030 processor is running at 25 MHz. This means that the processor (which is already faster than a 68000) is actually running nearly 4 times as fast as the standard 68000. This results in a marked increase in the speed at which the machine does just about anything. The speed advantage is truly great when you consider that programs loaded into the machine's memory are loaded into the 32 bit RAM first. That means the program instructions are also executing at 25 MHz; but more importantly, they are already executing in half the time, because they are dealt with in pieces twice the size of the 68000's (16-bit vs. 32-bit)!

> *"From a programmer's point of view also, the 2500/30 is really a dream come true."*

MATH COPROCESSOR

There are a few programs available for the Amiga that can be helped by the presence of a math coprocessor. The 2630 card in the 2500/30 also includes a Motorola 68882 Math Chip. This math coprocessor is clocked at 25 MHz, as is the 68030. There are, however, provisions for installing a faster math chip (one clocked at 33 MHz). The 68882 math chip is approximately twice as fast at transcendental math functions as its brother, the 68881 math chip. Programs that are effected by this chip's presence most notably are ray-tracing programs like Turbo Silver 3.0 and Sculpt-Animate 4D. Using these programs one could expect 400% increases in speed over the regular 2500, or 600%-800% over a stock A2000.

DRIVE, COMMODORE SAID

The 2500/30 also comes with a 40 meg autobooting hard disk. This hard drive is not the same as the standard 2000 HD (a A2090A card with a Commodore installed Rodyme drive mechanism), but rather, Commodore's new A2091 half-card SCSI hard disk controller with a Quantum 40 meg hard disk mechanism. This came as quite a surprise to me as the Quantum hard disk is perhaps the fastest hard drive available. Boasting access time in the 19 ms range, the Quantum drive unit included with the 2500/30 really helps bring the raw speed of the system to life.

The A2091 Hard Disk Controller Card (also available separately) is a half-card unit allowing the user to mount a 3.5 inch hard drive mechanism directly to the card, freeing up a 3.5 inch drive bay in the process. The half-card fits neatly in the first Amiga expansion slot where, even if there is a drive attached to the card, no other slots are obscured. This gives the user full access to all those glorious expansion slots. The 2091 even comes with expansion memory sockets of its own. These sockets accept standard 256 x 4-bit DRAM chips, which are available in the marketplace for around 11 or 12 dollars each. The Card will accept up to 2 megs of expansion RAM. One nice feature of the 2091 is that its expansion RAM can be configured in 512k, 1 meg or 2 megs. This allows the user on a budget to expand a little at a time. Most other memory expansion cards for the Amiga require that the user expand a full 2 meg at a time. The smaller increments allow Amigans with small pockets to expand their systems at their convenience.

SETUP

Setting up the unit is a breeze. The hard drive comes preformatted with all the files on a standard Workbench and extras 1.3 disks. The drive is formatted under the FastFileSystem. Plug in the keyboard, mouse, power cable and monitor cable and turn on the system. In a few seconds you will be looking at a standard Workbench 1.3. The memory count will read something like 2800000 bytes free (2.8 meg). You are now ready to roll.

THE MANUALS

Other than the above mentioned cards, the 2500/30 is a standard Amiga 2000. The unit comes shipped in a standard A2000 box with standard A2000 manuals. The extra literature for the other cards installed is included separately. It's a grand tribute to the flexibility of the A2000 that simply by installing a few new cards, the user gets a totally different computer. This also means that any person who currently has a 2000 can easily purchase the necessary cards and get a 2500/30, if that is what they want.

TAMING THE BEAST

Using this incredible machine is basically no different than using a standard A2000, although the presence of the hard disk makes the unit faster in responding to your commands. Even if you have used a hard disk before, the Quantum Drive is very *very* fast. Installation of your favorite peripherals is no different, because the base machine is actually an Amiga 2000.

HARDWARE COMPATIBILITY

I have tested the 2500/30 with several other products, including ....

- *Mimetic's Frame Buffer*
- *flickerFixer (MicroWay)*
- *ProGen Genlock (Progressive Peripherals)*
- *Commodore 2058 RAM expansion card*
- *Commodore 2052 RAM expansion card*
- *Commodore A2088 Bridgeboard*
- *ASDG Dual Serial Port Card*
- *AMax (ReadySoft)*
- *MAC-2-DOS (Central Coast Software)*

I have found the hardware compatibility to be quite good with the new unit. Using all of these devices in conjunction with one another in a standard A2000 does not bring up any difficulties.

SOFTWARE COMPATIBILITY

Software compatibility is also an issue with the 2500/30. The presence of a 68030, or for that matter any processor other than the 68000, can make some software break. There are other concerns when writing software that will run on both processors. The software that I have tested with the 2500/30 worked for the most part. There were, however, some exceptions...

I had trouble getting AMax to boot correctly to the MAC's workbench. It would ask me for the system diskette as usual, start to boot, and then bomb. The problem seems to have been the PYRO desk accessory. All I had to do was remove that desk accessory from the system folder, and the system ran fine—and also very quickly.

You may be questioning how I could remove the PYRO desk accessory when I could not get the system booted up in the first place. The answer is really another one of the neat features of the Amiga 2500 series of computers.

If you hold down both mouse buttons when you power the system on or reset (warm-boot) the system with the CTRL/AMIGA/AMIGA keypress, the system will display a screen with three choices of operating modes. The menu looks something like...

AmigaDOS 68000

AmigaDOS 68030 (68020 if you
have a 2500)

AMIX

Selecting the AmigaDOS 68000 allows you to use the standard 68000, A2000 with a hard disk. The 32-bit memory on the accelerator card is disabled as is the 68030 and the math coprocessor. Selecting the Amiga DOS 68030 is the same as the default configuration where all the new equipment is enabled. The AMIX selection does not work, unless you have the Commodore version of UNIX installed on your system.

Being able to disable the 68030 makes the machine compatible with virtually any Amiga software, including a great number of games. For the most part the only software that will not run on the 68030 directly are games like Shadow of the Beast, Obliterator, Datastorm, Barbarian and a few others.

FAST, FAST, FAST RELIEF

Is the cost of the machine justified? The 2500/30 in its standard configuration lists for $5495. It is, however, fair to state that most dealers will be happy to discount a system like this one—so one might expect to pay quite a bit less. Even with reduced pricing, however, the 2500/30 is still expensive as Amigas go. The real issue here is speed. If you need the speed this machine positively *blazes*. An example of people who may need the speed are animators and other videophiles, who may be used to waiting days or even weeks to see if his a ray-traced animation is going to turn out all right. Using the 2500/30 in conjunction with Sculpt-Animate 4D, I have had dramatic reductions in the per-frame time for ray-traced animations. Previously, my Amiga 2000 could spend 3 or 4 hours on a single, relatively uncomplicated frame. My A2500/30 does those same frames in less than 20 minutes! Clearly, the machine does its job very well.

From a programmer's point of view also, the 2500/30 is really a dream come true. The presence of 32-bit RAM makes the system so fast that it makes your head spin. There are several programs in the PD world that support the 68030 processor and allow some tricks that make the system even faster. One such program is called SETCPU (the latest version is 1.5). With SETCPU you can turn on the instruction and data caches in the processor. Then the 68030 can prefetch instructions and store them in the cache. The execution of instructions in a cache greatly increases the speed of the machine. SETCPU also allows the user to install the Kickstart ROM into the 32-bit memory. This makes the operating system run at 25 MHz also, giving even more speed. This program, while not included with the machine, is available from many BBS systems and The Fred Fish collection.

Well, it's now been a few weeks since I got my A2500/30, and I have had all sorts of programs and peripherals running to test it. I have also already turned the basic machine into what I affectionately call my Franken-Amiga. Overall, I am so very impressed with the performance of the machine that I would not trade it back for anything.

•AC•

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C Notes

from the C Group

Are You A Programmer?

by Stephen Kemp

For close to two years now, I have been trying to write articles to help the beginning C programmer. During this time I have discussed a number of different subjects about the C language and have included some personal practices and anecdotes. April always seems to be a good time to look at the lighter side of programming in celebration of April Fools' Day. In respect of this all-important holiday, let's look at just what it takes (or means) to be a programmer.

An old poem (song, saying, or whatever it is) says little girls are made of sugar and spice and everything nice, while little boys are made of snakes and snails and puppy dog tails. Now, I'm not exactly sure that this formula led to the creation of the human race, but I do know that it isn't detailed enough to explain how the programmer evolved. The poem doesn't mention sodas, coffee, or any caffeinated drink. Nor does it mention anything about candy bars, late night pizza delivered in a cardboard box, or popcorn popped by the bushel. These facts prove to me that some questions still remain unanswered about the origin of the species known as "programmer". Perhaps we need to add another line to the poem like, "Programmers are made of coffee and bytes and pizza at night." But even if we could define what makes up a programmer, it still would not explain the programmer's mind.

It is difficult to put into words just what goes on in a programmer's mind, even when you have one yourself. Perhaps the best explanation can be made by rewriting the old adage, "You are what you eat". A programmer's mind is what it is fed. The programmers I know (including myself) feed their brains a variety of things that tend to bore the less technical person (layman). Now, this is not intended to be any kind of an insult to laymen. The fact is that non-techies usually think computer people are crazy and/or nerdy. We, on the other hand, know that neither is true, and those who think these things are true are just being illogical and/or have a few screws loose themselves.

The programmer's diet for the brain usually consists of things found in the 4 basic food groups: Science Fiction Books, Television, Comics, and the Active Imagination. Coming up with the precise diet that leads to having a programmer's mind is difficult. I have found that many enjoy a diet consisting of literature from people like Douglas Adams, Frank Herbert, Raymond Bradbury, and dozens of other Sci-Fi/Fantasy writers. A side dish of Dr. Who, Star Trek (new and reruns), Monty Python movies, and Quantum Leap usually go very well with any meal. For dessert, the brain enjoys a few Far Side or Doonesbury comics. The Active Imagination is usually considered a snack between meals, although some programmers enjoy it as their main course.

Now that you know some of the things that go into a programmer's mind and body, how can you tell if you or someone you love is a programmer? Try the following test:

1. When someone says, "I have a question" do you answer, "42"?
2. What is the average wing speed of a swallow?
3. Do you own something by Gary Larson?
4. How many Doctors have been on Dr. Who?
5. Can you make the Vulcan sign for "Live long and prosper"?
6. Do you get involved in lengthy discussions about time travel?
7. What does TARDIS stand for?
8. On the old Star Trek, what did it mean when someone you had never seen before beamed down to the planet with the regular cast?
9. Are two of your favorite movies *The Terminator* and *The Meaning of Life*?
10. How many programmers does it take to change a light bulb?

If you can answer more than half of these questions then chances are you could be a programmer. Either that or a real sicko. Do you want to know the answers to these questions? Sorry, you'll have to ask a real dyed-in-the-wool programmer. Be prepared—the answers to these questions may lead to long dissertations and recitations from the responder. This is another trait of the programmer—you can not ever give a simple answer.

Being a programmer is not all it's cracked up to be, though. You have to learn to deal with the lunatic fringe. These people assume that the programs you write are magic and that you can accomplish miracles just by the wave of your hand. Don't they know that every now and then your hand gets tired? And some days I can't find my magic wand to save my life. How about you?

The best explanation for how a programmer fits into an organization goes something like this corporate title list:

President—Faster than a speeding bullet, more powerful than a locomotive, and can leap a tall building in a single bound.

Vice President—Almost as fast as a bullet, can push over a train engine, and can leap a short building with a running start.

Manager—Faster than a squirt gun, can be run over by a train without screaming, and can leap from a building if it is on fire.

Salesman—Can cause a self-inflicted wound with a squirt gun, says "Look at the choo-choo," and has trouble walking through an open door on the side of a building.

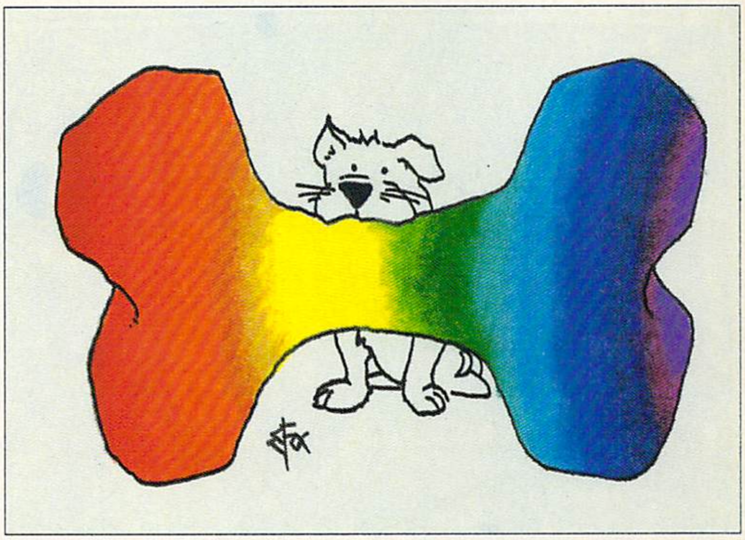
(continued on page 90)

HAM BONES

— Fundamentals of HAM Mode Programming in AmigaBASIC

by Robert D'Asto

If I had to name a single reason for my first purchase of an Amiga — that one special feature that turned my head and made me want to own one above all others — I would have to say it was the 4,096-color display capability. Oh, there were other reasons, of course, but it was really the creative possibilities presented by its color prowess that finally made up my mind to join the Amiga ranks. I suspect the same is true for many others.



Surprisingly, though, there are still only a handful of Amiga software products which take advantage of HAM Mode graphics. Its programming can be very complex and time consuming for certain applications, especially paint programs, so long development times become a major consideration for developers and an intimidating barrier for freelance programmers. A commerical-quality HAM graphics utility is not the sort of project one can expect to knock out over a weekend between pizzas and Schlitz.

Fortunately, there are many possible applications of HAM Mode graphics which do not require such formidable programming efforts, yet can greatly enhance the look and user-enjoyment of BASIC programs. And yes, HAM Mode applications can be programmed in AmigaBASIC and other BASIC implementations. In fact, it is one of the easiest languages to use for this mode. The relative slowness of the interpreter makes programming a commercial quality, HAM paint program with AmigaBASIC less than realistic due to the number crunching required by such utilities, but a paint program is only one of many possible applications of HAM.

Including programmer-designed HAM graphics in one's own applications is considerably easier then designing the next Great American Paint Program, and what program wouldn't be improved by including a few thousand colors in its display? There is something about HAM-rendered title screens, graphic objects, fonts, gadgets or just plain doodles that adds an appealing sparkle to a program and marks it as uniquely Amiga.

WHAT IS HAM MODE?

HAM is an acronym for Hold and Modify and represents a special Amiga system configuration with which it is possible to display up to 4,096 different colors on the monitor at the same time. Understanding how HAM works and how to program in this mode requires first a grasp of how colors are represented in the "normal" Amiga display modes.

See spot run wild.

The monitor's display is made up of colored dots often called pixels (short for picture elements) which provide us with all of the text and graphic representations visible on the screen. In the case of the Amiga, the number of dots present on the screen at any one time varies according to the current resolution mode in operation. The term resolution refers to the number of pixels the display is currently using. High resolution (hi-res) means lots of smaller pixels and lo-res means fewer, larger pixels. There are basically four possible resolution modes on the Amiga and these are: lo-res (320 X 200), lo-res interlace (320 X 400), hi-res (640 X 200) and hi-res interlace (640 X 400). The numbers in parentheses refer to the number of horizontal and vertical pixels of each mode. These numbers are actually "nominal" figures, which means that they refer to the rectangular area of the screen which is normally used to contain display information, disregarding the extreme edges and rounded corners. Higher resolution displays use a greater number of smaller pixels so the display is "cleaner" and able to define images in finer detail.

Okay, say we have a lo-res screen showing on the monitor. That's a total of 320 times 200 or 64,000 pixels defining our display. Let's now zero in on one of those little dots and see how its color is defined.

Each and every pixel you see on the screen has a certain quantity of memory reserved and associated with it. This is how the colors of pixels are determined. In the case of a monochrome or "black and white" display that memory would amount to one bit for each pixel. This single bit of memory can have two possible states. These states can be referred to as "set and unset" or "on and off" or "one and zero", or any other way you want to think of two opposite states. In the example of the black and white display our single pixel might be white if its assigned memory bit was set and black if the bit was unset. The color assignments could also be reversed as far as which state produces which color. The point is that each pixel is associated with one bit and that bit has two states so a maximum of two different colors can be recorded for that pixel. There's a considerable amount of hardware and software activity involved in seeing to it that this relationship exists between that bit and that pixel, but that's basically all there is to it as far as the programmer is concerned.

In the case of our lo-res, monochrome display, the operating system has reserved 64,000 bits to keep track of all the screen's pixels. That's equivalent to 8,000 bytes or 4,000 words of memory. Since each pixel is tied to a single bit in this example, our control of each screen dot is limited to setting or unsetting its single corresponding bit. The 8,000-byte memory area which is used to record our black and white display is referred to as a bit-plane. This term is used because you can think of this memory area as being a rectangular "plane of bits" sitting just behind the monitor's display with each bit positioned behind its assigned pixel. That isn't its actual physical shape or location, of course, but it makes it easier to think of it in this way as we will see in a moment.

Now, let's add some color to the picture. Using the same lo-res display we will say that a second area of memory is allocated by the system which also contains 8,000 bytes. It has a different physical location in memory, but is otherwise a duplicate of our original bitplane. Each of the bits within our new bitplane is also tied to an individual pixel on the screen, so each dot now has two bits associated with it, one in each bit plane. In order to differentiate between the two bitplanes we will refer to the original as bitplane zero and the new one as bitplane one. Think of bitplane one as being just behind bitplane zero which is just behind the monitor screen. In our mental image each pixel now has two memory bits positioned behind it.

This second bitplane now gives the system the ability to record four possible colors for each pixel, since two bits provide four possible combinations of states: 00,01,10 or 11. If both bits are "unset" (00) we'll say that the bit is blue. If the "top" bit (the one in bitplane zero) is set and the other isn't (01) we'll say the pixel is white. We will assign black to the "10" combination and "11" will be associated with gold. These, of course, are the default colors of the Workbench screen. Notice also that the binary numbers produced by these bit combinations equal decimal 0, 1, 2, and 3 respectively and correspond to the AmigaBASIC PALETTE and COLOR numbers. The bit in bitplane zero (the one just behind the screen in our mental image) always corresponds to the rightmost bit in these calculations.

It's important to remember that these binary values recorded in the bitplanes do not actually define any specific color. The colors themselves are defined elsewhere. The values derived from the bitplanes only denote which of these predefined colors is currently being used by the pixel. The actual color definitions are recorded in one of the Amiga special purpose chips which bears the name Denise. This chip contains 32 registers which hold color definition data. Using the AmigaBASIC PALETTE statement changes the data in the Denise color registers, while using a statement such as COLOR only determines which of these colors will be used for a specific purpose.

Both of the bitplanes being used by our example display, taken together, are referred to as the screens bitmap. If we add a third bitplane to our bitmap (called bitplane two) the system will then be able to keep track of eight colors for its display. Four bitplanes would provide 16 colors and five increases this to 32 different colors which can be displayed at one time. The number of colors is equal to two raised to the power of n, where n is the number of bitplanes. Having more than four bitplanes, though, is only possible in the lo-res and lo-res interlace resolution modes. This is a restriction imposed by the system hardware.

How many bitplanes are required to display 4,096 colors? Going by the above formula, 12 bitplanes would be needed to handle this amount of color information. Fortunately, (or unfortunately, depending on how you look at it) the Amiga designers have come up with a clever and memory-conserving trick for displaying this number of colors using only six bitplanes. The trick involves using the six bitplanes in such a way that the six bits of each pixel can be used in conjunction with the six bits of the pixel to its left. This results in an effective total of 12 bits per pixel and thus 4,096 possible colors (2 to the 12th power) can be displayed simultaneously.

The advantage of this arrangement is a significant savings of memory resources. A lo-res screen having a bitmap consisting of 12 bitplanes would require a minimum of 96,000 bytes of memory just to keep track of all the pixels' colors. Additionally, these bitplanes must be placed in the lower 512K of the Amiga's memory, regardless of how much expansion RAM exits due to current hardware restrictions, so conservation of this area of RAM is important. Using six bitplanes instead of 12 cuts this memory requirement in half.

The disadvantage is the added complexity of programming required to work with HAM displays, since the color of each pixel is not completely independent of other pixels. Changing the color of one pixel often brings about a color shift of others. Rendering a color in a particular screen location also requires additional calculations and operations which can slow down drawing speed, especially when using an interpreted language like AmigaBASIC.

That's basically the plus and minus of HAM Mode programming, but these are not necessarily the most important factors. The fact remains that nicely done HAM graphics add an extraordinary visual "punch" to any program, providing both the programmer and the user with the graphic power and artistic communication he expects from his machine.

> *"A commerical-quality HAM graphics utility is not the sort of project one can expect to knock out over a weekend ..."*

PROGRAMMING HAM

There are two basic factors involved with programming in HAM Mode. The first is setting up the HAM Mode display configuration and the second is rendering graphics in this mode once it has been set up. The former is relatively easy and the latter is not difficult once the mechanics of this mode are understood. We'll start with how the mode is set up.

The easiest way to create a HAM display with AmigaBASIC is to first create a normal display and then "convert" it to HAM. This method has two advantages. It requires a minimum of coding, and the HAM display so created will respond to the usual BASIC graphics commands such as LINE, PSET, PAINT and so on. Some methods previously published which demonstrate HAM programming in BASIC require ROM Kernel routines for all graphics rendering, increasing the complexity of the code considerably. The method described here provides compatibility with the interpreter and a much more familiar environment for the actual creation of HAM graphics. The graphics library functions, of course, can still be used right along with the BASIC keywords.

Setting up the HAM Mode display requires three basic steps, and each will be described in detail as we go along. First, a bitmap consisting of six bitplanes must be allocated in memory. Secondly, the operating system must be informed as to the location of these bitplanes. Lastly, the display system must be given a special, coded message instructing it to operate in HAM Mode. The BASIC coding for each of these steps is given in the "HAM.ON" subprogram within the "HAM_TOY" listing provided at the end of the article and is described in detail below.

How do we create six bitplanes? Most of the work can be done with the AmigaBASIC SCREEN command. This keyword gives us the ability to create a Screen possessing up to five bitplanes with only a single line of code. That takes care of five of the bitplanes, but what about the sixth? Using the parameter "six" in the depth parameter of the SCREEN statement won't work; we'll only get an "Illegal Function Call" error message from the interpreter. The trick is to take the five bitplanes that SCREEN gives us and use a special ROM Kernel routine to create the sixth bitplane.

This routine is called AllocRaster and resides in the graphics library. A "raster", in this context, is a synonym for "bitmap". This routine is used to allocate (reserve memory) for the bitplanes which make up a bitmap. It creates a single bitplane of the requested dimensions each time it executes and returns the memory address

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of the beginning of that bitplane. Since a bitplane must reside in the lower 512K area of memory, this routine always does its allocation within that specific area, which is called CHIP RAM.

AllocRaster is a graphics library routine so its use requires a "graphics.bmap" file to execute. If you're not familiar with the use of bmaps, this information can be found on your Extras disk in a file called "About BMAPS" and in your AmigaBASIC manual. There is also more information and a utility for streamlining the use of bmaps in my article "Breaking The BMAP Barrier" in the March '89 issue (AC V4.3).

Since AllocRaster returns a value (the address of the allocated bitplane) the DECLARE FUNCTION statement must also be used. At the top of the listing, then, you will need the following statements:

```
DECLARE FUNCTION AllocRaster&() LIBRARY
LIBRARY "graphics.library"
```

and the syntax for calling the routine is:

```
BitplaneAddr&=AllocRaster&(width, height)
```

The width and height parameters are the dimensions of the bitplane measured in pixels. When more than four bitplanes are being used by the system, the resolution mode must be either lo-res or lo-res interlace. We're going to be using six bitplanes here and keeping things as simple as possible, so dimensions of 320 for width and 200 for height are recommended. The variable "BitplaneAddr&" will be assigned the value corresponding to the address of the allocated bitplane when AllocRaster completes execution.

The combined use of the SCREEN statement, with a depth of five and the AllocRaster function gives us our six bitplanes and satisfies the first step of creating a HAM display. We now must ensure that the system knows about the location of all six of these bitplanes. We don't have to worry about the five bitplanes created with the SCREEN keyword as this statement has taken care of that detail for us and the system already knows about those planes. We need only "introduce" our new, sixth bitplane to the display system so that it can be utilized along with the others.

Accomplishing this requires an understanding of how the Amiga system keeps track of the bitplanes which make up a bitmap. In the Amiga operating system this is done with a special data structure called a BitMap Structure. A structure is a block of memory which contains a predetermined sequence of smaller memory areas. These smaller units are usually bytes, words (two bytes) or long words (four bytes). The structure might contain any number of these units and in any combination. Once the structure is created, though, these units remain fixed as to size and sequence. The information they contain, however, can be changed at any time.

A BitMap Structure is a structure used by the system to keep track of the bitplanes which comprise a bitmap and has a length of 40 bytes. It looks like this:

```
WORD: "BytesPerRow"(=width of display in columns)
WORD: "Rows"(=height of display in pixels)
BYTE: "Flags"(=option flags)
BYTE: "Depth"(=total number of bitplanes)
WORD: "Pad"(= two  unused "pad" bytes)
LONGWORD: "Planes(8)"(=8 longword bitplane addresses)
```

The names within quotation marks are the labels for each field of the structure as given in the ROM Kernel Manual. The labels on the left give the size of each field. I'll explain each one of these fields in turn.

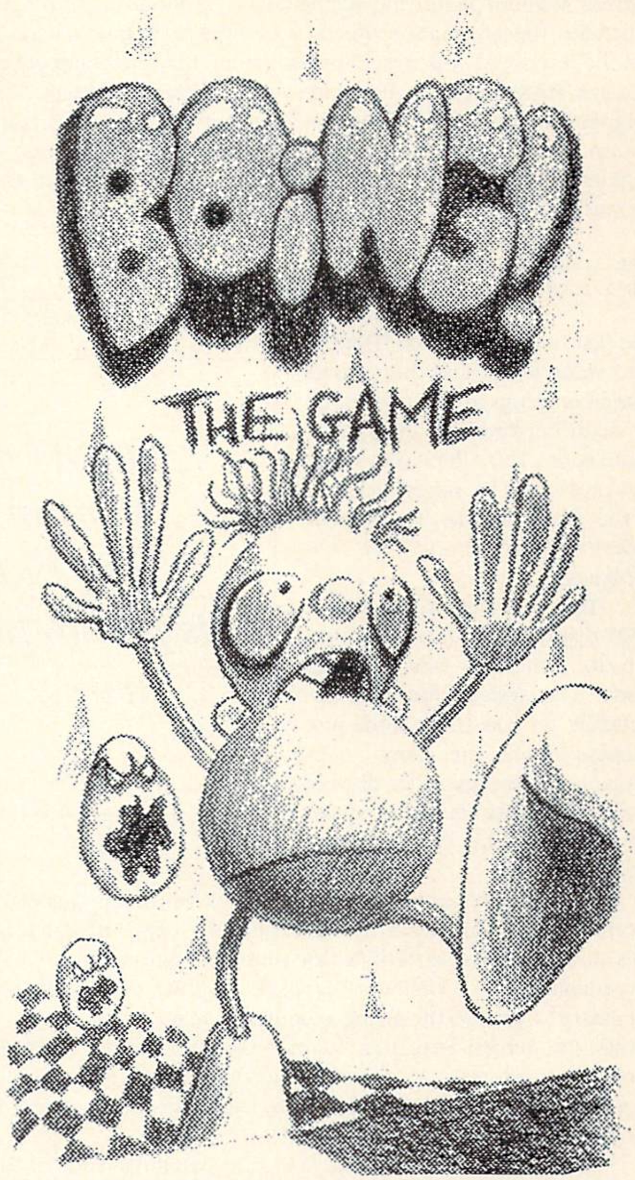
The first word (two bytes) in the BitMap Structure contains the width of the display measure in bytes (not pixels), which is the same as saying the column width of the display. This value would usually equal 40 for a lo-res display. The second field, Rows, is also a word in length and contains the height of the display measured in pixels, which would be 200 in this case. If an interlace display were being used this value would be 400. The next field is a single byte, Flags, which can be used to hold a value pertaining to various options. It is not used here and can be left holding a value of zero. The fourth field is also a byte in length and holds the value which defines the depth of the display. In other words, it is the total number of bitplanes that comprise the bitmap. This is followed by a "Pad" word which is there only to position the longword that follows at an address which is a multiple of four, a requirement of the system. It holds no significant value so can be left at zero. Finally, we have the "Planes(8)" field. This is actually eight longwords, bringing the total to 40 bytes for the entire structure. Each of these eight longwords can contain the address of a bitplane. If, for example, we had a display which used three bitplanes, the first three longwords would contain their respective addresses and the remainder would contain zeros. The current Amiga system supports a maximum of six bitplanes, the last two spaces in the BitMap Structure being reserved for future system upgrades.

When we write an AmigaBASIC program which uses the SCREEN statement, a BitMap Structure is created automatically and the structure is "initialized" (filled in) with the appropriate values. Even if we don't create a custom screen and just use the default Workbench screen for our program, a BitMap Structure is still created by the system and we don't have to worry about setting it up ourselves. In our example we first create a screen with a depth of five with the SCREEN keyword. After this command executes we can be sure there will be a BitMap Structure in RAM and it will contain all the information outlined above, including the addresses of the five bitplanes. We then use the AllocRaster function to create a sixth bitplane. All that is now required to introduce this new bitplane to the display system is to change the "Depth" field of the BitMap Structure from five to six, and to provide the address of the new bitplane in the sixth longword of the "Planes(8)" part of the structure.

This is done with POKE and POKEL statements respectively, but we must first locate the address of the existing BitMap Structure so we know where to start POKING. I'll get right to the punchline and give you the coding which will locate the address of the BitMap Structure:

```
BitMapStruct&=PEEKL(WINDOW(7)+46)+184
```

Because the Amiga is a multitasking machine it must be able to shift various structures around in memory to make room for new tasks and program requests for memory. To solve the problem of finding these shifting system elements, many of the structures contain the current addresses of other structures and these address pointers are updated as necessary by the system. The AmigaBASIC WINDOW(7) function provides us with the address of the Window Structure associated with the currently active window. This is a block of data which contains all the relevant information pertaining to the window such as its physical dimensions, location and many other parameters. It also contains the addresses of other structures. Unfortunately, it does not contain the address of the BitMap Structure. It does, however, contain the address of the Screen Structure and this second structure does hold the BitMap Structure



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address. Without getting into all the details of Window and Screen Structures, the information which is pertinent to the task at hand is that the longword which is 46 bytes beyond the beginning of the Window Structure holds the address of the Screen Structure. The longword which is 184 bytes from the start of the Screen Structure in turn contains the BitMap Structure address. The above code fragment, then, will fetch the address of the BitMap Structure and we can now make the desired changes, like this:

```
POKE BitMapStruct&+5,6
POKEL BitMapStruct&+28,BitplaneAddr&
```

The first line changes the "Depth" field value to six and the second statement "plugs in" the address of the sixth bitplane into the appropriate spot. The AllocRaster function previously found the address of the new bitplane. The system now "knows about" all six bitplanes.

The final step in creating a HAM display is signaling the system to switch to this graphics mode. The system doesn't automatically go into HAM Mode just because there are now six bitplanes. There are other display modes which use six planes, so we have to "tell" the system which mode we want.

> *"It isn't a Photon Paint, but it is fun to play with..."*

As you might have guessed, this involves the manipulation of another system structure. This one is called the ViewPort Structure. This block of data is also 40 bytes long and it contains various values and pointers which define a complete graphics display. It isn't necessary to get into the details of it except to say that it is located within the Screen Structure. It's not that the Screen Structure contains its address, it's that the ViewPort Structure is wholly contained within the Screen Structure itself. This arrangement is known as a sub-structure.

We're really only interested in one particular field of the ViewPort Structure. This is a word-length element called "Modes" which contains a coded value corresponding to one of several possible graphics display modes of the Amiga. The coded value which corresponds to HAM Mode is equal to decimal 2048 or 2^11. All we now have to do is "plug" this value into the correct two-byte spot within the ViewPort Structure and we're in HAM city. The ticket is this BASIC code fragment:

```
ModesAddr&=PEEKL(WINDOW(7)+46)+76
POKEW ModesAddr&,2^11
```

The first line gives us the address of the Modes parameter within the ViewPort Structure. The second statement inserts the value that tells the system to switch to HAM Mode.

One final line of code and we'll be home. In switching from one display mode to another we must ensure that the current display is appropriately updated to conform to the new setup. We don't have to worry about all the details involved in doing this as there is an Intuition library routine which will do it all for us. It's called RemakeDisplay and it requires no parameters. Simply call the routine and Intuition will do the rest.

The system will now be in HAM graphics mode. The subprogram called "HAM.ON" in the HAM TOY listing provided shows how all these steps are done. Additionally, the "HAM.OFF" sub does the opposite. It returns the system to a conventional display and frees up the memory that was allocated previously for the sixth bitplane. It should be self-explanatory except for one new function call. This is the graphics library routine FreeRaster, which simply frees up the memory which was allocated earlier with AllocRaster. It requires three parameters: the address of the bitplane to free up, its width and its height. The address will be the same as was originally returned with AllocRaster.

Note that the "HAM.ON" sub only works when a screen with a depth of five has been previously created with the SCREEN statement. The sub first checks to see (by looking at the appropriate field of the BitMap Structure) how many bitplanes exist in the current display. If it doesn't find the value "five"; the subprogram is exited, making no changes to the display. Likewise, the HAM.OFF routine checks to ensure that there are currently six bitplanes in the display before it "dismantles" the HAM Mode and returns to a normal display.

PROGRAMMING WITH HAM

Now that we have a HAM display we have to do something with it. As stated earlier, the normal AmigaBASIC graphics keywords will work when HAM Mode is brought about in this way, but how do we take advantage of this display mode? How are the colors controlled? That's another story.

First we need to review how colors are controlled in conventional displays, then we'll step up to HAM rendering. In the beginning of this article we had a mental image of how bitplanes were theoretically arranged in layers behind the display screen. The first plane behind the screen was bitplane zero, the next was bitplane one and so on. Each pixel, then, has many bits associated with it as there are bitplanes in the entire bitmap. If we had, say, a screen with a depth of four bitplanes (numbered zero to three) this would give us the potential of using 16 different colors. The four bits of each pixel could be set to equal any number from zero to 15.

When we set up the HAM display we created a bitmap consisting of six planes behind the screen. The easiest way to envision how the system uses these six bits in HAM Mode is to mentally divide the six bitplanes into two groups: The "top" four bits and the "bottom" two bits. The top group (four bits) can define any number from zero to 15 and the bottom group (two bits) can be any number from zero to three. We'll refer to the value denoted by the top group of bits as the Color Value and we'll say that the value of the bottom bits is the HAM Value. The Color Value, then, can be zero to 15 and the HAM Value can be zero to three.

Now, let's get to the crux of the HAM equation. If the HAM Value (bottom two bits) equals zero (binary 00), then the color of the pixel will simply be that PALETTE color which corresponds to the Color Value number. In other words, it will be just as if we had only four bitplanes and had 16 colors to choose from for our display. We can render in any of these 16 colors simply by specifying a value from zero to 15, and we can define what these colors will be with PALETTE statements. As long as we specify a color number in the range of 0-15 the HAM Value will be zero (the two bottom bits unset), and programming with colors works like a normal four-bitplane screen. As an example, the statement "PSET(10,10),4" will set the specified pixel to the color "four" as defined by a previous PALETTE statement, or to the default color "four" if no PALETTE statement has been previously used. This will be the case when any number from zero to 15 is used in the AmigaBASIC graphics keywords.

As soon as we use a color with a number greater than 15, one or both of the HAM Value bits will be set and we enter HAM country. How high a number can we use for specifying colors in HAM? No, it's not 4095 (that would be too easy for us genius programmers), the answer is 63, because we still have only six bits per pixel and 63 is the highest number that can be denoted with six bits.

Using any color from zero to 15 will cause the bottom two bits (the HAM Value) to equal zero. Using color numbers from 16 to thirty-one will cause the HAM Value to be set to decimal "1" (binary 01). Colors 32 to 47 sets the HAM Value to decimal " two " (binary 10) and specifying any color from forty-eight to sixty-three will result in a HAM Value of decimal "three" (binary 11).

What result do these HAM Values have on the displayed color? If the HAM Value is decimal "1" it means that the system will first read the color of the pixel to the immediate left of the specified location, its red and green elements will stay as they are, modify the blue portion of the color according to the value contained in the Color Value portion of the bits and display the color that results. That's how Hold And Modify gets its name. It means "this pixel shall have the color which results from holding two of the red-green-blue elements of the pixel to its left and modifying the remaining element on a scale of zero to 15".

Let's try an example. We'll say that the pixel located at the coordinate "0,0" is black. That means that it has a red-green-blue (RGB) value of "0,0,0". We now specify the color of the pixel to it's immediate right with "PSET(0,1),23". We're using a color number greater than 15, so it will be a HAM color. It is in the range of "16-31" so the bottom two bits will equal decimal "1" as stated in the above paragraph. Specifically, it is number "23" which is the eighth number of the 16-31 range. That results in the top four bits (the Color Value bits) being set to the eighth value of their range, which will be seven because they can have any value from zero to 15. This now tells the system what color to render the new pixel. It is to read the pixel to the immediate left (the black one), hold the red and green values of that pixel (because the HAM Value equals "1") and modify the blue value to 7/15, so the new pixel will be rendered with an RGB value of "0,0,7/15" or "0,0,.47" if you prefer. It's just as if we wrote the AmigaBASIC color-defining statement "PALETTE x,0,0,7/15" to specify the color of the new pixel.

Specifying any color, then, from 16-31 will result in the system first reading the color to the immediate left of the affected pixel, and rendering the new pixel in a color which is a modification of the blue portion of that pixel to its left. The degree of modification depends on which number within the range of 16-31 is specified. This means that rendering a pixel in the color "25", for example, may result in a different color if drawn in two different places on the screen. It will depend on the existing color of the pixel to the left of the newly drawn pixel. It also means that changing the color of a pixel which is to the immediate left of a "HAM color" pixel will change the color of that HAM pixel, since its color depends on that of its neighbor on the left.

It works the same way for the rest of the colors above 15. Colors 32-47 will render a color which is a modification of the red portion of the pixel to the left and colors 48-63 will change the green portion. The only colors you can be sure won't change once rendered are the colors from zero to 15. They're not HAM colors and do not depend on the color of any other pixel.

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This may seem quite complex at first, but with a little practice, you'll get the hang of "HAM-think" and it will become quite simple. I'll give you another example. We'll say that a particular pixel on the screen is red and we want to color the pixel to its immediate right. If we use a color in the range of 0-15 the new pixel will simply be that color chosen, just like it is with normal displays. If we choose a color in the range of 16-31, the color of the new pixel will be a modification of the blue part of the old pixel. This new blue value will depend on which of the numbers from 16-31 was chosen. If the number 16 was chosen the blue part of the new pixel will be 0/15 or zero. If the number 31 was chosen the blue part will be 15/15 or 1, which is the maximum. Choosing a color with a number in the range of 32-47 will modify the red part in the same manner and colors 48-63 modify the green portion.

How do you render two neighboring HAM pixels in the same color? Just specify the same color number for both. The pixel on the right will hold two of the RGB values of the left pixel and the third value will also be the same because it will have the same value in the top four bits. What about circles, lines and rectangles? These graphic objects are all made up of individual pixels. Each of the pixels will be colored according to the rules given above. This is where planning your display comes in.

The accompanying AmigaBASIC listing, HAM_TOY, illustrates the basic "moves" for programming in HAM Mode. It's a sort of basic HAM paint program. It isn't a Photon Paint, but it is fun to

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play with and allows you to see the various effects of rendering and changing HAM colors on the screen. It contains no save feature so the drawings created will be lost when the program ends. There are also no elaborate drawing tools, simply a single brush of variable width. It will, however, draw in any of the 4,096 HAM colors. Choosing the drawing color is done by selecting "Set Color" in the Project menu. A window will appear requesting any number from 0-4095. Enter the number, press return and start drawing. The color can be changed at any time. If you enter the color number "0" the brush will render in random colors. Changing the drawing width is done by selection in the "Brush Width" menu.

In order to better control the selection of colors, enter hex numbers in the "Set Color" window. That is, numbers in the hexadecimal system with the BASIC "&H" prefix. These can be any three-digit hex number from "&H000" to "&HFFF". Doing it this way makes it easier to enter a specific, desired color because each of the three hex digits will specify an RGB value. For example, the number "&HF00" means maximum red, no green and no blue and so on. The hex digit on the left provides the red value, the middle digit is green and the right digit is blue. Numbers from "&H001" to "&H00F" will not be HAM colors as they specify the basic palette colors 1-15 and will also be drawn on the screen much faster than the HAM colors since no special calculations are required. These colors can be changed by including PALETTE statements in the source code within the "InitStuff" subroutine.

The heart of the source code is the "HAMpaint" subprogram. This sub first decodes the desired color number contained in the "ColorPick" variable. This value is the number entered in the Color Select window and has a maximum value of 4095 which equals &HFFF in hex. The arithmetic at the beginning of the sub extracts the values of each of the three hex digits which comprise the ColorPick number, each denoting the relative values of the red, green and blue content of the desired color.

The pixel which is three pixels to the left of the mouse is then changed to black to give an easy starting point for HAM calculations. Moving to the right, the blue portion of the next pixel is modified to match that of the desired color and then the green portion of the next pixel is changed to the desired amount and, finally, the pixel under the mouse has its red value modified to bring about the actual requested HAM color. This is done for several rows of pixels below the mouse location as well so that a rectangle can be drawn under the mouse which is filled with the desired color.

This form of HAM colorizing is about as simple and basic as it gets. The idea behind HAM_TOY is to demonstrate to BASIC programmers how the Amiga HAM Mode works, not necessarily to provide a type-in paint program. That's not to say, though, that it couldn't be made into such a utility with additional work. Drawing HAM colors in this way is relatively easy but results in "color fringing"; that is, the drawn colors will have three pixels of different colors on the left side. The background color is set to black to minimize this, but it is still quite noticeable. Writing additional routines which further minimize this color fringing or even eliminate it is possible, of course, but results in a considerable slowdown of execution due to the relative slowness of the interpreter. There's also no provision for preventing one HAM color from changing a previously painted HAM color to its immediate right on the screen. Feel free to experiment with the source code, though, as that is the purpose of the program. Compiling the program with the AC/BASIC compiler from Absoft or one of the other compilers currently available will speed things up nicely. If you're an Assembly language programmer you can also use Machine language subroutines for even greater speed.

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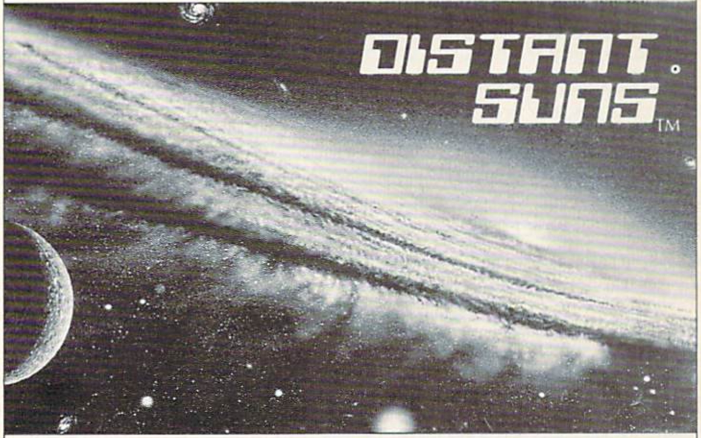

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There are two subroutines in the HAM_TOY listing which I better explain. These are FixMenu and FixScreen. Both of these routines are tricks for solving problems related to AmigaBASIC menus used with HAM Mode. The easiest way to understand the problems that these routines solve is to delete the GOSUBS which call these routines when you run the program. Two glitches will become apparent in short order. The first is that the menu highlighting will not work right. Instead of being highlighted, the menu items pointed to by the mouse will simply disappear from the menu. The other problem shows up when you draw something on the screen in an area which is later covered by an appearing menu. The menu appears "splotchy", with colors from the screen below appearing to leak into the menu and ruining the menu's text.

Both of these problems have the same cause. Menus are handled by Intuition and this portion of the operating system displays menus by "swapping" rectangular areas of the screen's bitmap with areas in an off-screen bitmap. The menu is first drawn in a separate bitmap and, when the right mouse button is pressed and a menu is selected, the swap occurs. The problem is the off-screen bitmap doesn't have as many bitplanes as does the HAM display in this case, so some of the screen's biplanes remain during the swap. This interferes with the normal highlighting action of the menus and allows part of the screen image to remain visible within the menu display.

The FixMenu routine handles the first problem by selecting an alternate method of menu highlighting offered by Intuition called "HIGHBOX", which highlights selected items by drawing a box around them. This is done by changing the "Flags" field of each of the MenuItem Structures. These structures are described in detail in my earlier article "Industrial Strength Menus" (A/C 4.1). Various menu display options can be selected by changing the value contained in this field.

The "splotchy menu" problem is solved with the FixScreen routine. This sub merely opens and closes a window on the "real" display window. This second window can actually be opened anywhere on the screen and it can be of any size. All that matters is that it is opened "on top" of the existing window. Once this is done the window is immediately closed as its job is done and now the main screen display won't interfere with the menu. The reason that this little trick works has to do with the Amiga system constructs known as "layers". The concept of layers is a device used by the system to keep track of display information which is covered and uncovered by overlapping windows. When two windows overlap, the same display area of one of the windows will appear to be in front of the other. This effect is controlled by the system's recognition of two distinct display layers. This control is accomplished with the use of (you guessed it) special structures such as the LayerInfo Structure and others. There is also a library of system routines called the layers library for manipulating layers. What does all this have to do with menus? When Intuition pops a menu onto the screen it uses a layers library routine to do the bitmap-swapping. It's actually a portion of the top screen layer that's being swapped with the off-screen menu bitmap. Opening another, "up front" window creates another layer on top of the real display window so this new layer will be used in the swap instead of the layer in which the real display resides. This works even though the new window is immediately closed. This is because AmigaBASIC doesn't really close windows when the WINDOW CLOSE statement is used, it just moves the window out of the display area. The window's data structure remains in RAM, waiting to be used should the window be opened again, along with its layer structure.

While I'm off on a tangent, I might as well include a few words on another subject: The display mode called Extra-HalfBrite. This mode allows the use of 64 colors on screen at once. It's not nearly as spectacular as HAM, but it does have the advantage of being much easier to work with from a programming standpoint. Extra-HalfBrite also uses six bitplanes but it uses them in a more conventional manner. The first 32 colors (0-31) can be defined with PALETTE statements. The remaining 32 colors (32-63) will possess half the RGB values of their counterparts in the original, defined set. Specifying colors in your program is done by simply using any color number from zero to sixty-three.

Setting up Extra-HalfBrite Mode is done in nearly the same way as HAM. The only difference is that the "Modes" value which is changed in the ViewPort structure is equal to decimal 128 (2^7) instead of 2048 (2^11). To create an Extra-HalfBrite display simply change the value "2^11" in the HAM.ON subprogram to "2^7". You can then draw, using all the AmigaBASIC graphics keywords, with 64 colors.

If you're interested in using HAM Mode in your own programs, I suggest starting out with the use of designed graphics rather than something like a paint program. HAM colorized title screens, backgrounds and graphic objects add a great deal to the overall look and enjoyment derived from Amiga programs and there's no reason that AmigaBASIC applications can't use them. A HAM Mode display really only requires an additional 8K of memory over that needed by a normal, five-bitplane display, so you won't have to give up much to gain a lot.

FOR/NEXT loops which increment the screen coordinates and Color Value numbers of drawn graphics can be used to render gently shaded objects to very good effect. Full width, horizontal lines can be drawn in this way creating rainbow backdrops and designs. Experiment with circles and rectangles too. Once you understand how HAM Mode works, AmigaBASIC becomes a very versatile HAM paint program in its own right.

Listing One

```
'* * * * * * * * * * * * * * *
'*                           *
'*        HAM_TOY            *
'*                           *
'* AmigaBASIC source code    *
'*           by              *
'*      Robert D'Asto
'*                           *
'* * * * * * * * * * * * * * *

OPTION BASE 1
DECLARE FUNCTION AllocRaster&() LIBRARY
DECLARE FUNCTION ViewPortAddress&() LIBRARY

LIBRARY "graphics.library"
LIBRARY "intuition.library"

SCREEN 1,320,200,5,1
WINDOW 2,"HAM TOY",,30,1
DEFINT a-z:RANDOMIZE TIMER

HAM.ON
ON BREAK GOSUB EndIt:BREAK ON

GOSUB InitStuff
GOSUB DoMenu
GOSUB FixScreen
GOSUB FixMenu

ON MOUSE GOSUB DrawIt:MOUSE ON

WHILE -1:SLEEP:WEND

EndIt:
  HAM.OFF
  LIBRARY CLOSE
  WINDOW CLOSE 2
  SCREEN CLOSE 1
  MENU RESET
  SYSTEM
  END
RETURN

DrawIt:
  WHILE MOUSE(0) <> 0
    IF ZFlag=1 THEN ColorPick=INT(RND*4095)
    HAMpaint MOUSE(1),MOUSE(2),ColorPick
  WEND
RETURN

InitStuff:
  DIM M(3) 'array for setting menu checkmark
  M(1)=1:M(2)=1:M(3)=1
  LastItem=2:PenWidth=5:ZFlag=1
  PALETTE 0,0,0,0
  ' set any other colors you like here
  ' or leave them as the default colors
  PALETTE 15,0,0,1
RETURN

DoMenu:
  MENU 1,0,1,""

  MENU 2,0,1,"Project  "
  MENU 2,1,1,"Set Color"
  MENU 2,2,1,"Clear     "
  MENU 2,3,1,"Quit      "

  MENU 3,0,1,"  Brush "
  MENU 3,1,1,"__Thin  "
  MENU 3,2,1,"__Medium"
  MENU 3,3,1,"__Wide  "

  MENU 4,0,1,""

  ON MENU GOSUB MenuSort
  MENU ON
RETURN

MenuSort:
  MenuPick=MENU(0)
  ItemPick=MENU(1)
  IF MenuPick=2 THEN
    ON ItemPick GOSUB GetColor,ClearIt,EndIt
  ELSEIF MenuPick=3 THEN
    PenWidth=ItemPick*2+1
    M(LastItem)=1
    M(ItemPick)=2
    LastItem=ItemPick
    MENU 3,1,M(1) ' set menu checkmark
    MENU 3,2,M(2)
    MENU 3,3,M(3)
  END IF
RETURN

GetColor:
  IF ZFlag=1 THEN ColorPick=0
  ZFlag=0
  WINDOW 3,,(0,0)-(200,60),0,1
  Msg:
  PRINT "Current color ="+STR$(ColorPick)
  PRINT
  PRINT "Choose any color number"
  PRINT "from 0 -> 4,095"
  PRINT
  PRINT "(0=Random Colors)"
  PRINT
  INPUT "Choice";ColorPick
  IF ColorPick < 0 OR ColorPick > 4095 THEN Msg
  IF ColorPick=0 THEN ZFlag=1
  WINDOW CLOSE 3
RETURN

ClearIt:
  WINDOW OUTPUT 2
  CLS
RETURN

FixMenu: ' see article for explanation
  MenuStrip&=PEEKL(WINDOW(7)+28)
  MenuAddr&=PEEKL(MenuStrip&)
  ItemAddr1&=PEEKL(MenuAddr&+18)
  Flags=PEEKW(ItemAddr1&+12)
  Flags=Flags + &H40

  FOR n=1 TO 2
    FOR x=1 TO 3
      POKEW ItemAddr1&+12,Flags
      ItemAddr1&=PEEKL(ItemAddr1&)
    NEXT x
    MenuAddr&=PEEKL(MenuAddr&)
    ItemAddr1&=PEEKL(MenuAddr&+18)
  NEXT n
RETURN

FixScreen: 'see article for explanation
  WINDOW 4,,(1,10)-(310,185),0,1
  WINDOW CLOSE 4
RETURN

SUB HAM.ON STATIC 'enables HAM Mode
  SHARED BM&,plane6&,ModeAddr&,mode%
  BM&=PEEKL(WINDOW(7)+46)+184
  IF PEEK(BM&+5) <> 5 THEN EXIT SUB
  plane6&=AllocRaster&(320,200)
  IF plane6&=0 THEN EXIT SUB
  POKEL BM&+28,plane6&
  POKE BM&+5,6
  ModeAddr&=PEEKL(WINDOW(7)+46)+76
  mode%=PEEKW(ModeAddr&)
  POKEW ModeAddr&,2^11
  CALL RemakeDisplay&
END SUB

SUB HAM.OFF STATIC 'returns to normal
  SHARED BM&,plane6&,ModeAddr&,mode%
  IF PEEK(BM&+5) <> 6 THEN EXIT SUB
  CALL FreeRaster&(plane6&,320,200)
  POKEL BM&+28,0
  POKE BM&+5,5
  POKEW ModeAddr&,mode%
  CALL RemakeDisplay&
END SUB

SUB HAMpaint (x,y,col) STATIC
  SHARED PenWidth
  IF col < 16 THEN LINE(x,y)-(x+PenWidth,y+5),col,bf:EXIT SUB
  red   =col\256
  green =col\16-red*16
  blue  =col MOD 16
  FOR n=0 TO 5
    PSET(x-3,y+n),0
    PSET(x-2,y+n),16+blue
    PSET(x-1,y+n),32+red
  NEXT
  LINE(x,y)-(x+PenWidth,y+5),48+green,bf
END SUB
```

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WB_VirusCheckers (dir)

VirusX4.0
Runs in the background and checks disks for viruses or non-standard boot blocks whenever they are inserted. (Recognizes several viruses and non-standard boot blocks. Removes virus in memory.) Finds the new Xeno file virus.

Sentry
Revision of VirusX1.01 in Lattice C.

ViewBoot
Highly active mouse-driven disk and memory virus-checker which allows you to look at the pertinent areas (useful in case you suspect a NEW virus!)

VRTest3.2
Watches memory for viruses; will alert the user and allow their removal if found. Can check & INSTALL disks, etc.

CLI_VirusCheckers (dir)

XenoZap
Disables the Xeno virus in infected files. Checks every file in all directories of the specified devices allowing the fast removal of the Xeno virus.

AVirusII
From The Software Brewery (W. German). Disables a virus in memory.

Clk_Doctor3
Corrects problems with the clock (caused by malignant programs, perhaps not really a "virus") (A500 & A2000)

Guardian1.1
Checks for attempts at viral infection at boot! Allows you to continue with a normal boot (if desired). Includes a small utility program to permanently place the program on a copy of your Kickstart disk.

KillVirus
Removes (any?) virus from memory.

VirusKiller
A graphically appealing and user friendly program by TRISTAR.

Boot-Block_Stuff

SafeBoot2.2
SafeBoot will allow the user to save custom boot sectors of all your commercial disks and save them for such an emergency. If a virus somehow manages to trash the boot sectors of a commercial disk, just run SafeBoot and it will restore the boot sectors, therefore saving your disk!!

Virus_Alert V2.0.1
Yet another anti-virus program with a twist. Once installed on your boot disk a message is displayed just after a warm or cold boot notifying the the user that the disk and memory are virus-free, and forcing a mouse-button press before continuing.

BootBack1
Saves and restores boot-blocks. Runs from CLI only.

Antivirus *aka AVBB*
Includes SEKA assembler source.

XBoot
Converts a boot-block into an executable file, so you may use your favorite debugger (Wack, Dis, ...) to study it.

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by Rich Falconburg

THE COMMAND LINE

As a result of the lack of various features available in the default console handler as supplied on the Workbench distribution disk, a number of improvements to the Command Line Interface have been engineered. One of the pioneers in this area is William Hawes of ConMan and ARexx fame. The advent of ConMan came as a long-awaited enhancement over the standard CLI. This program added a variety of features and tools to the console window that have proven to be nearly indispensable. But this new console handler was not enough by itself. Mr. Hawes saw a need for additional utility and a convenient way to take advantage of the power of ARexx. The result is a shell that is completely compatible with AmigaDOS and is designed as an excellent front end to the most powerful scripting language yet available on the Amiga.

WShell is functionally similar to the AmigaShell, but adds features that make it far more powerful as a Command Line Interface environment. Some of the features include:

- Command Aliases
- Built-in Commands
- Resident Commands
- Direct ARexx Script Support (in addition to Execute Scripts)
- Extended Prompt Control
- Window Title Options
- Concurrent Piping
- Keymap Support
- Ability to work with any AmigaDOS-compatible Console Handler
- Full Support of Existing AmigaDOS Operations

By itself, WShell is only a little more capable than the current implementation of the AmigaShell. When coupled with ARexx, however, it becomes a powerhouse shell environment that places the Amiga in the ranks of the big boys. WShell supports ARexx as its native script language, thus making the difference between executable files and ARexx command scripts indistinguishable to the user. As a stand-alone product, WShell provides a comfortable environment for the novice as well as the sophisticated user. Through the use of environment variables, it is possible to customize the console environment and how WShell responds to command input. The latest version of ConMan is included on the distribution disk as well as several utility programs that will further enhance ConMan. Although it is not necessary to use ConMan as the replacement to the CON: device, I would highly recommend doing so. Here is a summary of some of the features it provides:

A. Editing

1. Complete editing facilities using the Left and Right cursor keys.
2. The DELETE key works as it should. Delete words backward (F7) and forward (F8). Delete from the cursor to the end of the line (Control Y), to the start of the line (Control U), or delete the entire line (Control X). Delete all lines including type ahead lines (Control Z), or return them (Control R).
3. Skip to next word, backward (Shift Left Arrow) and forward (Shift Right Arrow).
4. Toggle between Insert and Overstrike (Control A), or force Insert mode (Control ^).
5. Clear the window and re-display the active line (Control W).
6. Control N and Control O allow selection of the Alternate Character set.

B. Flow Control

1. Stop (Control S) and restart (Control Q) output to the display. If you attempt to enter characters after Control S has been pressed, ConMan will remind you with an audible beep.
2. Control characters not used for editing are displayed with a preceding carat (^) and will not interfere with the display.

C. Command History

1. Recall previously entered lines by pressing the Up or Down Arrow keys. Shifting each of these will recall the latest and oldest line respectively.
2. Clear the history buffer with Control B.
3. Buffer size and recall mode options that may be set when ConMan is first started. This affects all console windows. If you need to change these later, the utility program SetCMan makes it easy. The default buffer size is large enough to hold 25 to 30 lines.
4. Search the buffer forward (F6) or backward (F5) for a match on a partial string.
5. If you've entered a long line and accidentally hit the up or down cursor keys (thereby recalling a previous line), you can get it back with Control - [minus].
6. Define the minimum line length that will be stored in the history buffer.

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D. Window Manipulation

1. Shrink (F1) or expand (F2) the console window.
2. Pop the window (F10) or the screen (F9) to the back or to the front.
3. New window attribute options for including or excluding the gadgets and other features.
4. Workbench color support for the title bar.
5. Superbitmap support.

E. Special Console Handling

1. A deferred opening mode that prevents the console window from opening until it is read from or written to. Defined as the CND: handler.
2. A CNN: handler that provides an invisible type-ahead buffer (à la VAX/VMS).
3. A CNX: handler that allows the user to specify the device to be used for the console display. Useful for AUX: type support.

As with most shell programs,WShell provides several commands that are built into the shell itself. Now, lest you think that this will use up a lot of memory, you should know that WShell operates with a shared library concept. This means that the first invocation of WShell will cause the shared resource library, wshell.library, to be copied to memory. Each subsequent shell window that is opened will share this same resource, thereby reducing the overhead required.

The internal commands of WShell include:

```
CD        ECHO      ELSE      ENDCLI
ENDIF     FAILAT    GOTO      IF
LAB       MOUNTED   PAUSE     POPCD
PROMPT    PUSHCD    QUIT      REXX
SKIP      STACK     SWAPCD
```

Most of the above commands should look familiar. The AmigaDOS equivalents may be removed from your floppy if you need the space. The GOTO command is functionally similar to the new SKIP command. It will jump to the defined LABel. MOUNTED is useful for checking the current status of a given file or device. The PAUSE command allows you to print a prompt string and wait for any keypress (except Shift and Alt) to continue. POPCD, PUSHCD, and SWAPCD provide flexibility in navigating directories. You may save the current directory in a special stack with PUSHCD and later recall that directory, regardless of where your current directory is set to, with POPCD. If you wish to jump back and forth between two directories, simply use SWAPCD to exchange the names. Although ARexx commands will execute without the need to precede them with the REXX command, WShell will not permit a REXX script to call itself recursively. The REXX command may be used to force recursion by executing the script unconditionally.

Improvements have been made to the CD and the PROMPT command. WShell will allow an implied CD. It is possible to enter the path name without preceding it with the CD command. The PROMPT command has been expanded to provide new identifier strings. These include:

String	Substituted Value
%B	vertical bar (|)
%C	current directory
%E	elapsed time
%F	failure level
%G	greater-than sign (>)
%I	task ID
%L	less-than sign (<)
%N	task number (CLI number)
%R	return code
%S	stack size
%T	time of day
%Y	command error code
%1 - %4	color
%[program]	execute program

The last option lets you run a program as part of the prompt string by entering the program name, including any required parameters, between the square brackets. The above identifiers may also be used as part of the title bar for the console window. By creating a prompt string and saving it as ENV:titlebar, WShell will place the information in the title bar of each window. You may use any of the identifiers except the %[. Also, any ANSI escape sequences will be ignored.

Resident commands may be used with WShell via the RESI command. The template for this resident command is:

```
resi [-delete] [-ignore] [-list]
     [-order] [-quiet] [-replace] [filename]
```

Which translates to:

-d remove a command from the list
-i suppress checksum to validate code purity
-l list resident commands (DEFAULT switch)
-o sort the command list in order of usage
-q suppress warning messages
-r reload an existing command

To force WShell to execute from disk rather than using the resident version, simply precede the command with the " [" character.

WHO WAS THAT MASKED COMMAND?

It is often nice to be able to call a command by another name. For example, I use the @ symbol instead of typing EXECUTE. AmigaDOS calls commands by the names given in the C: directory. The early recommendation was to copy the command to a new name. That way, you could call it what you wanted without having to be concerned about other programs becoming upset if they could not find a command by the expected name. This is a band-aid for the lack of something called an alias. It seems ridiculous to have duplicate copies of commands simply because you don't like the names, doesn't it? The ability to create an alias for a command eliminates this overhead. An alias is an "Also Known As" for any valid command or program. AmigaShell now supports this, and WShell always did. For example, many people using the Amiga are accustomed to UNIX commands (there I go again). With the WShell, one could create an alias for common commands such as:

```
alias ls=list
```

In addition, you may establish command abbreviations with the ALIAS command. For example, wouldn't be nice if you could enter a command with only the first three letters such as DEL for delete? Set up the alias thus:

```
alias DELete=delete
alias COPy=copy
alias Type=type
alias Run=run
```

The uppercase letters define the number of characters that must be entered for a match. This in no way affects the existing command name. I could still enter T or TYPE, both are acceptable to the shell.

THE PLUMBER ARRIVES

Pipes! The standard pipe character, the vertical bar (|), will allow redirection of the output of one command to the input of another. This uses the PIP: device provided by ConMan to pass the information and it is transparent to the user.

THE AREXX CONNECTION

WShell will automatically detect the availability of the ARexx server. Path searching and command name parsing is slightly different if ARexx is installed. WShell will search the path assigned to rexx: if it does not find the command in your current directory. In a default case, WShell will look for "command" and "command.rexx". This allows the use of Rexx macros to customize existing commands. WShell also provides for some powerful capabilities using the Inter-Process Communication available with ARexx. WShell and ARexx were made for each other.

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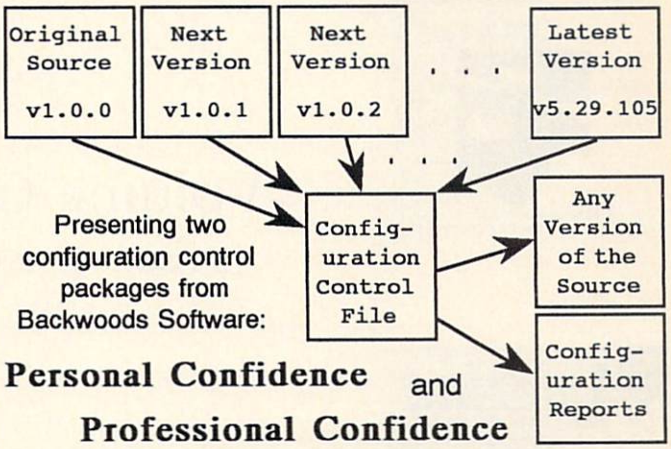

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IN SUMMARY

WShell comes with a short but complete user's guide that is well written and informative. Examples included show how to use the various features of WShell. An Index and Table of Contents makes finding the information simple. The distribution disk contains everything (except ARexx, of course) to make this shell complete. Included is an installation script to help you get started, as well as the latest versions of ConMan and the ARP commands. Rexx macro examples and a directory containing Assembler source code are also included, the latter being for programmers wishing to experiment with some of the capabilities described in the manual.

I found the WShell capable and reliable. William Hawes is known for producing quality software and this product is no exception. If you have purchased or are considering the purchase of ARexx, I would highly recommend buying WShell as well. If you are looking for a shell program that will expand your script writing capabilities without the need to purchase any additional software, I would tell you to look elsewhere. While WShell does improve on some of the capabilities of the AmigaShell, without the addition of ARexx it is nothing more than a substitute for the AmigaShell.

Don't lose heart yet. If you don't have the money for either WShell/ARexx or Tshell, you won't be left out in the cold. Several enterprising programmers have written other shells that are available in the public domain. One in particular will give you power nearly equal to that of either of the ones mentioned above. Next time I'll introduce you to these and take a new road on our journey down the Command Line.

•AC•

Back Issue Special

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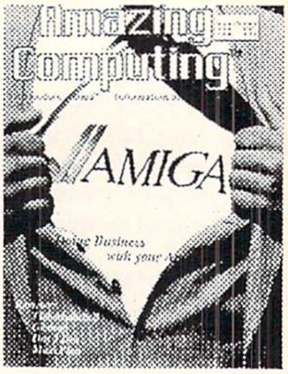

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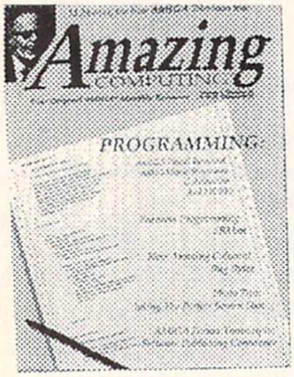

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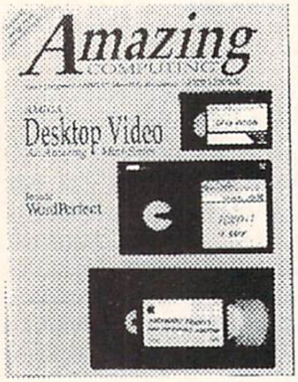

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PRODUCT ALERT! PRODUCT ALERT! PRODUCT ALERT!

Due to some difficulty with their telephone system, MicroIllusions was unavailable for inclusion in the *AC's Guide To The Commodore Amiga Winter Thaw '90.* They were also reported as out of business in the March issue of *Amazing Computing*. Their phones have been restored and they are currently available at 1-818-360-3715 (FAX 1-818-360-1464). Their mailing address is MicroIllusions, P.O. Box 3475, Granada Hills, CA 91394. We regret any inconvienence this may have caused anyone at Microillusions or any of their patrons.

The following products were not included in the Winter Thaw '90 edition of *AC's Guide*. All of the descriptions below were furnished by Microillusions.

Entertainment

Black Jack Academy Black Jack Academy teaches you the rules and strategies needed to win big. Realistic sound and detailed animated graphics make you feel like you're right in the casino! You'll learn to be a winner before you lay your money on the line. *$39.95*

Craps Academy Craps Academy can teach you the intricacies of the game in a single afternoon! Use the extensive menu of Vegas Variations, or set the rules to match those of your favorite casino. The fully automated craps table will make you think you're in Reno! $39.95

Fire Power Fire Power is just what it takes to meet this gruelling military challange. Shadow 6, Marc XJ1, or the Scorpion—these are the machines of destruction you may choose from. Nothing can stand in your way. Blast choppers! Obliterate turrets! Or crush the fleeing enemy beneath your treads! Fire Power is the name of the game. *$24.95*

The Faery Tale Adventure Book The Faery Tale Adventure contains over 17,000 smoothly scrolling screens which make up a world of castles, inns, cities, and dungeons that takes weeks to explore. The sound track sets the mood for wandering, combat, and night time sequences. The adventure begins, "Once upon a time..." *$49.95*

Turbo Load the missles. Stock the grenades. Now you're ready to roll! Turbo will push your driving and combat skills to the limit. Test your courage on the mountain roads. Blow away your enemies on the crowded city streets. Against the computer or one to one. Turbo will take you for the ride of your life. *$24.95*

Graphics

Cel Animator 2D Animator with sound synchronization. Complete control of order, speed, and delays. Includes pencil test functions! *$149.95*

Photon Paint 2.0 Special effects HAM paint program with animation, wrapping, twisting, bending with light sources. *$149.95*

Music

Music X Music X is a music processor with sequencer, bar editor, events editor, filters page, keymapping, sampler, librarian, patch editor, protocol editor, and a comprehensive manual written by a musician for musicians. *$299.95*

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Transport Controller Color frame accurate controller of external animation controllers including Lyon Lamb, BCD, and Video Media controllers. Record from one to 300,000 frames each time an image is displayed. *$299.95*

Edit Decision List Processor Complete off-line editor with MS-DOS, CMX, and Amiga format support. Created specifically for the professional environment. *$499.95*

OOPS!!

In the January '90 and March '90 issues of AC, errors appeared in two articles. The following are corrections to portions either inadvertantly changed or omitted during the editorial process.

***MenuBuilder** by Tony Preston (V. 5.1)*

Page 75: Listing 2 should begin right after "Batch".

Listing 2.MENU should be Listing 3.C.

Listing 3.C is the actual program.

● ● ● ● ● ● ● ●

***MusicTitler** by Brian Zupke (V. 5.3)*

The following data file was omitted from Mr. Zupke's article:

```
MyAlbums

*
* My Favorite Music Albums
*

A Garbage Men at Work - Take Out the Trash

T I Got the Recyclin' Blues  (10:12)
T Don't Give me That Garbage  (03:26)
T She Got the House, I Got Junk  (09:56)

A Fred's Mechanix - Free Estimates

* Two second delay

B -2

T What's Wrong With My Car?  (11:23)
T Never Put it in Writing  (23:22)
T Have Wrench, Will Travel  (15:19)

A Amigoids of Amerika - Who Needs MS-DOS?

T He Was Blittered to Infinity  (00:11)
T Oh Mighty Guru!  (25:39)
T We Don't Need No Program DOCS  (79:11)
```

We apologize for these errors and any inconveniences that may have been caused.

(***Indiana Jones**, continued from page 40*)

eypad on your keyboard. You can throw high, middle, or low punches by hitting the 9, 6, or 3 keys respectively. To defend yourself, you position Indy's arms in either the upper, middle, or lower positions by hitting the 8, 5, or 2 keys, respectively (you can practice your boxing with a coach before you leave Barney College).

Boxing is not the only activity you perform in this adventure. You must also learn to pilot a biplane (Henry would do it, but somebody has to try to shoot down the Nazis!). Flying the biplane is also done via the keypad, and although it takes a little time to get used to, it is not too tedious.

The puzzles and game play are the best portions of the Graphic Adventure. Graphics in this game are done in lo-res, so they are adequate but not spectacular. There are several animated sequences in the game (such as Indy's secretary bashing her head against the desk) which add some zest to it. The game does use some digitized sounds, and although they are not used often, they are well placed (remember the librarian stamping papers in Venice?). A nice touch is the use of background music during certain sequences, such as when searching through the catacombs.

Game documentation is well done also. It includes a 63-page Grail Diary, which is fun to read and actually comes in handy in several places during the game. The instruction manual is 11 pages long, and gives a short synopsis of the movie in case you did not see it. The manual also gives simple hints and clues on playing the game, and controlling the character. A 4-page reference card is also included, detailing the specifics on running the game on the Amiga (the game is also available in several other machine formats). The last piece of documentation is a "Translation Table". Near the beginning of each game, the player is asked to translate hieroglyphics on the screen. To do this, the player puts a red filter (included) over the translation table, and is then able to decipher the code. The translation table is fairly easy to use, and since this is done only once during the game, it doesn't get in the way of game play.

Overall, I liked the Graphic Adventure quite well. It was different enough from the movie to keep me interested, and it was also fun to play. The arcade sequences mixed in the game kept things lively. On the other hand, I did not like the Action Game. Game play was repetitive, and although sounds and graphics were nice, it did not take long to get through the game. Even though the Graphic Adventure costs $10 more, it is worth the extra money. Well, I have to go. It is time to save Henry!

•AC•

Indiana Jones and the Last Crusade—

The Action Game	***The Graphic Adventure***
Published by LucasFilms Games	
Distributed by Electronic Arts	
Price: $39.99	Price: $49.99
Inquiry #213	Inquiry #214

(***C-notes**, continued from page 72*)

Programmer—Catches bullets in his teeth and eats them, can stare a train off its tracks, and lifts buildings to walk under them.

Oh, did I mention that many programmers have an ego problem? Well, I just did. Please don't take any of those definitions seriously unless the shoe fits.

All in all, I find a slight sense of security in the fact that not just anyone can do my job. Nor can just anyone intrigue me with stimulating conversation. I suppose others feel the same about me, but who cares? If you aren't a programmer then you aren't...well, you know what you aren't. If you are a programmer, then enjoy yourself by basking in the wonders of the computer world.

The author of this article was born and raised in a small town in North Georgia that had one street which ran one way—out of town. No one knew the town's population because anyone that tried to count it could never return to report the results. Not coincidentally, this is where the phrase, "You can't go home again" originated. After a brief childhood, it was determined that he was afflicted with terminal logic and he was driven from home by the local postal carriers that refused to deliver any more computer literature. He now resides in South Florida where the weather is warm and his driving is considered no more dangerous than anyone else's.

•AC•

The AMICUS &
Fred Fish Collection

This software is collected from user groups and electronic bulletin boards around the nation. Each Amicus disk is nearly full, and is fully accessible from the Workbench. If source code is provided for any program, then the executable version is also present. This means that you don't need the C compiler to run these programs. An exception is granted for those programs only of use to people who own a C compiler.

The Fred Fish disk are collected by Mr. Fred Fish, a good and active friend of the Amiga.

Note: Each description line below may include something like 'S-O-E-D', which stands for 'source, object file, executable and documentation'. Any combination of these letters indicates what forms of the program are present. Basic programs are presented entirely in source code format.

AMICUS Disk 1

ABasic programs: Graphics

3DSolids	3d solids modeling prog. w/sample data files
Blocks	draws blocks
Cubes	draws cubes
Durer	draws pictures in the style of Durer
FScape	draws fractal landscapes
Hidden	3D drawing program, w/ hidden line removal
JPad	simple paint program
Optical	draw several optical illusions
PaintBox	simple paint program
Shuttle	draws the Shuttle in 3d wireframe
SpaceArt	graphics demo
Speaker	speech utility
Sphere	draws spheres
Spiral	draws color spirals
ThreeDee	3d function plots
Topography	artificial topography
Wheels	draws circle graphics
Xenos	draws fractal planet landscapes

ABasic programs: Tools

AddressBook	simple database program for addresses
CardFile	simple card file database program
Demo	multiwindow demo
KeyCodes	shows keycodes for a key you press
Menu	run many ABasic programs from a menu
MoreColors	way to get more colors on the screen at once, using aliasing
shapes	simple color shape designer SpeakIt speech and narrator demo

ABasic programs: Games

BrickOut	classic computer brick wall game
Othello	also known as 'go'
Saucer	simple shoot-em-up game
Spelling	simple talking spelling game
ToyBox	selectable graphics demo

ABasic programs: Sounds

Entertainer	plays that tune
HAL9000	pretends it's a real computer
Police	simple police siren sound
SugarPlum	plays "The Dance of the Sugarplum Fairies"

C programs:

ATerm	simple terminal program, S-E
cc	aid to compiling with Lattice C
decvnt	opposite of CONVERT for cross developers
Dotty	source code to the 'dotty window demo
echox	unix-style filename expansion, partial S,O-D
fasterfp	explains use of fast-floating point math
FixDate	fixes future dates on all files on a disk, S-E
freedraw	simple Workbench drawing prog.,S-E
GfxMem	graphic memory usage indicator, S-E
Grep	searches for a given string in a file with docs
ham	shows off the hold-and-modify method of color generation
IBM2Amiga	fast parallel cable transfers between an IBM and an Amiga
Mandel	Mandelbrot set program, S-E
moire	patterned graphic demo, S-E
objfix	makes Lattice C object file symbols visible to Wack, S-E
quick	quick sort strings routine
raw	example sample window I/O
setlace	turns on interlace mode, S-E
sparks	qix-type graphic demo, S-E

Other executable programs:

SpeechToy	speech demonstration
WhichFont	displays all available fonts

Texts:

68020	describes 68020 speedup board from CSA
Aliases	explains uses of the ASSIGN command
Bugs	known bug list in Lattice C 3.02
CLICard	reference card for AmigaDOS CLI
CLICommands	guide to using the CLI
Commands	shorter guide to AmigaDOS CLI commands
EdCommands	guide to the ED editor
Filenames	AmigaDOS filename wildcard conventions
HalfBright	explains rare graphics chips that can do more colors
ModemPins	description of the serial port pinout
RAMdisks	tips on setting up your RAM: disk
ROMWack	tips on using ROMWack
Sounds	explanation of Instrument demo sound file format
Speed	refutation of Amiga's CPU and custom chip speed
WackCmds	tips on using Wack

AMICUS Disk 2

C programs:

alib	AmigaDOS object library manager , S-E
ar	text file archive program, S-E
fixobj	auto-chops executable files
shell	simple CLI shell, S-E
sq, usq	file compression programs, S-E
YachtC	a familiar game, S-E
Make	a simple 'make' programming utility, S-E
Emacs	an early version of the Amiga text editor, S-E-D

Assembler programs:

bsearch.asm	binary search code
qsort.asm	Unix compatible qsort() function, source and C test program
setjmp.asm	setjmp() code for Lattice 3.02
SVprintf	Unix system V compatible printf()
trees.o	Unix compatible tree() function, O-D

(This disk formerly had IFF specification files and examples. Since this spec is constantly updated, the IFF spec files have been moved to their own disk in the AMICUS collection.)

John Draper Amiga Tutorials:

Animate	describes animation algorithms
Gadgets	tutorial on gadgets
Menus	learn about Intuition menus

AMICUS Disk 3

C programs:

Xref	a C cross-reference gen., S-E
6bitcolor	extra-half-bright chip gfx demo, S-E
Chop	truncate (chop) files down to size, S-E
Cleanup	removes strange characters from text files
CR2LF	converts carriage returns to line feeds in Amiga files, S-E
Error	adds compile errors to a C file, S
Hello	window ex. from the RKM, S
Kermit	generic Kermit implementation, flakey, no terminal mode, S-E
Scales	sound demo plays scales, S-E
SkewB	Rubik cube demo in hi-res colors, S-E

AmigaBasicProgs(dir)

Automata	cellular automata simulation
CrazyEights	card game
Graph	function graphing programs
WitchingHour	a game

ABasiC programs:

Casino	games of poker, blackjack, dice, and craps
Gomoku	also known as 'othello'
Sabotage	sort of an adventure game

Executable programs:

Disassem	a 68000 disassembler, E-D
DpSlide	shows a given set of IFF pictures, E-D
Arrange	a text formatting program, E-D

Assembler programs:

Argoterm	terminal program with speech and Xmodem, S-E

AMICUS Disk 4 Files from the original Amiga Technical BBS

Note that some of these files are old, and refer to older versions of the operating system. These files came from the Sun system that served as Amiga technical support HQ for most of 1985. These files do not carry a warranty, and are for educational purposes only. Of course, that's not to say they don't work.

Complete and nearly up-to-date C source to 'image.ed', an early version of the Icon Editor. This is a little flaky, but compiles and runs.

An Intuition demo, in full C source, including files: demomenu.c, demomenu2.c, demoreq.c, getascii.c, idemo.c, idemo.guide, idemo.make, idemoall.h, nodos.c, and txwrite.c

addmem.c	add external memory to the system
bobtest.c	example of BOB use
consoleIO.c	console IO example
creaport.c	create and delete ports
creastdi.c	create standard I/O requests
creatask.c	creating task examples
diskio.c	example of track read and write
dotty.c	source to the 'dotty window' demo
dualplay.c	dual playfield example
flood.c	flood fill example
freemap.c	old version of 'freemap'
geltools.c	tools for VSprites and BOBs
gfxmem.c	graphic memory usage indicator
hello.c	window example from RKM
inputdev.c	adding an input handler to the input stream
joystik.c	reading the joystick
keybd.c	direct keyboard reading
layertes.c	layers examples
mousport.c	test mouse port
ownlib.c, ownlib.asm	example of making your own library with Lattice
paratest.c	tests parallel port commands
seritest.c	tests serial port commands
serisamp.c	example of serial port use
prinintr.c	sample printer interface code
prtbase.h	printer device definitions
regintes.c	region test program
setlace.c	source to interlace on/off program
setparallel.c	set the attributes of the parallel port
SetSerial.c	set the attributes (parity, data bits) of the serial port
singplay.c	single playfield example
speechtoy.c	source to narrator and phonetics demo
timedely.c	simple timer demo
timer.c	exec support timer functions
timrstuf.c	more exec support timer functions
WhichFont.c	loads and displays all available system fonts

process.i and prtbase.i assmebler include files:

autorqstr.txt	warnings of deadlocks with autorequesters
consoleIO.txt	copy of the RKM console I/O chapter
diskfont.txt	warning of disk font loading bug
fullfunc.txt	list of #defines, macros, functions
inputdev.txt	preliminary copy of the input device chapter

License information on Workbench distribution license

printer pre-release copy of the chapter on printer drivers, from RKM 1.1

v11fd.txt 'diff' of .fd file changes from version 1.0 to 1.1 v28v1.diff 'diff' of include file changes from version 28 to 1.0

AMICUS Disk 5 Files from the Amiga Link / Amiga Information Network

Note that some of these files are old, and refer to older versions of the operating system. These files are from Amiga Link. For a time, Commodore supported Amiga Link, aka AIN, for online developer technical support. It was only up and running for several weeks. These files do not carry a warranty, and are for educational purposes only. Of course, that's not to say they don't work.

A demo of Intuition menus called 'menudemo', in C source

whereis.c	find a file searching all subdirectories
bobtest.c	BOB programming example
sweep.c	sound synthesis example

Assembler files:

mydev.asm	sample device driver
mylib.asm	sample library example
mylib.i	
mydev.i	
asmsupp.i	
macros.i	assembler include files

Texts:

amigatricks	tips on CLI commands
extdisk	external disk specification
gameport	game port spec
parallel	parallel port spec
serial	serial port spec
v1.1update	list of new features in version 1.1
v1.1h.txt	'diff' of include file changes from version 1.0 to 1.1

Files for building your own printer drivers, including dospecial.c, epsondata.c, init.asm, printer.c, printer.link, printertag.asm, render.c, and wait.asm. This disk does contain a number of files describing the IFF specification. These are not the latest and greatest files, but remain here for historical purposes. They include text files and C source examples. The latest IFF spec is elsewhere in this library.

AMICUS Disk 6 IFF Pictures

This disk includes the DPSlide program, which can view a given series of IFF pictures, and the 'showpic' program, which can view each file at the click of an icon. The pictures include a screen from ArticFox, a Degas dancer, the guys at Electronic Arts, a gorilla, horses, King Tut, a lighthouse, a screen from Marble Madness, the Bugs Bunny Martian, a still from an old movie, the Dire Straits moving company, a screen from Pinball Contruction Set, a TV newcaster, the PaintCan, a world map, a Porsche, a shuttle mission patch, a tyrannosaurus rex, a planet view, a VISA card, and a ten-speed.

AMICUS Disk 7 DigiView HAM demo picture disk

This disk has pictures from the DigiView hold-and-modify video digitizer. It includes the ladies with pencils and lollypops, the young girl, the bulldozer, the horse and buggy, the Byte cover, the dictionary page, the robot and Robert. This includes a program to view each picture separately, and all together as separate, slidable screens. The 'seeilbm' program, to turn any screen into an IFF picture.

AMICUS Disk 8

C programs:

Browse	view text files on a disk, using menus S-E-D
Crunch	removes comments and white space from C files, S-E
IconExec	EXECUTE a series of commands from Workbench S-E
PDScreen Dump	dumps Rastport of highest screen to printer
SetAlternate	sets a second image for an icon, when clicked once S-E
SetWindow	makes windows for a CLI program to run under Workbench S-E
SmallClock	a small digital clockin a window menu bar
Scrimper	the screen printer in the fourth AC S-E

Amiga Basic Programs:

(**Note**: Many of these programs are present on AMICUS Disk 1. Several of these were converted to Amiga Basic, & included here.)

AddressBook	a simple address book database
Ball	draws a ball
Cload	program to convert Compuserve hex files to binary, S-D
Clue	the game, Intuition driven
ColorArt	art drawing program
DeluxeDraw	the drawing program in the 3rd AC, S-D
Eliza	conversational computer psychologist
Othello	the game, as known as 'go'
RatMaze	3D ratmaze game
ROR	boggling graphics demo
Shuttle	draws 3D pictures of the space shuttle
Spelling	simple spelling program
YoYo	wierd zero-gravity yo-yo demo, tracks yo-yo to the mouse

Executable programs:

3Dcube	Modula-2 demo of a rotating cube
AltIcon	sets a second icon image, displayed when the icon is clicked
AmigaSpell	a slow but simple spell checker, E-D
arc	the ARC file compression prog must for telecom, E-D
Bertrand	graphics demo
disksalvage	prog. to rescue trashed disks, E-D
KwikCopy	a quick but nasty disk copy program: ignores errors, E-D
LibDir	lists hunks in an object file E-D
SaveILBM	saves any screen as IFF pic.E-D ?? ScreenDump shareware screen dump prog, E only
StarTerm	version 2.0, term program, XmodemE-D

Texts:

LatticeMain	tips on fixing _main.c in Lattice
GDiskDrive	make your own 5 1/4 drive
GuruMed	explains the Guru numbers
Lat3.03bugs	bug list of Lattice C version 3.03
MForgeRev	user's view of the MicroForge HD
PrintSpooler	EXECUTE-based print spool prog.

.BMAP files:

These are the necessary links between Amiga Basic and the system libraries. To take advantage of the Amiga's capabilities in Basic, you need these files. BMAPs are included for 'clist', 'console', 'diskfont', 'exec', 'icon', 'intuition', 'layers', 'mathffp', mathieeedoubas', 'mathieeesingbas', 'mathtrans', 'potgo', 'timer' and 'translator'.

AMICUS Disk 9

Amiga Basic Programs:

FlightSim	simple flight simulator program
HuePalette	explains Hue, Saturation, & Intensity
Requester	ex. of requesters from Amiga Basic
ScrollDemo	demonstrates scrolling capabilities
Synthesizer	sound program
WorldMap	draws a map of the world

Executable programs:

Boing!	latest Boing! demo,with selectable speed,E
Brush2C	converts an IFF brush to C data instructions, initialization code, E
Brush2Icon	converts IFF brush to an icon, E
Dazzle	graphics demo, tracks to mouse, E
DeciGEL	assembler program for stopping 68010 errors, S-E-D
Klock	menu-bar clock and date display, E
life	the game of life, E
TimeSet	Intuition-based way to set the time & date
EMEmacs	another Emacs, more oriented to word processing, S-E-D
MyCLI	a CLI shell, works without the Workbench, S-E-D

Texts:

FnctnKeys	read function keys from Amiga Basic
HackerSln	explains how to win the game 'hacker'
Ist68010	guide to installing a 68010 in your Amiga
Boing!	latest Boing! demo,with selectablespeed, E
Brush2C	converts an IFF brush to C data instructions, initialization code, E
Brush2Icon	converts IFF brush to an icon, E
Dazzle	graphics demo, tracks to mouse, E
DeciGEL	assembler program for stopping 68010 errors, S-E-D
Klock	menu-bar clock and date display, E
life	the game of life, E
TimeSet	Intuition-based way to set the time date,
EMEmacs	another Emacs, more oriented to word processing, S-E-D
MyCLI	a CLI shell, works without the Workbench, S-E-D

Texts:

FnctnKeys	explains how to read function keys from Amiga Basic
HackerSln	explains how to win the game 'hacker'
Ist68010	guide to installing a 68010 in your Amiga
PrinterTip	sending escape sequences to your printer
StartupTip	tips on setting up your startup-sequence file
XfrmrReview	list of Transformer programs that work

Printer Drivers:

Printer drivers for the Canon PJ-1080A, the C Itoh Prowriter, an improved Epson driver that eliminates streaking, the Epson LQ-800, the Gemini Star-10, the NEC 8025A, the Okidata ML-92, the Panasonic KX-P10xx family, and the Smith-Corona D300, with a document describing the installation process.

AMICUS Disk 10 Instrument sound demos

This is an icon-driven demo, circulated to many dealers. It includes the sounds of an acoustic guitar, an alarm, a banjo, a bass guitar, a boink, a calliope, a car horn, claves, water drip, electric guitar, a flute, a harp arpegio, a kickdrum, a marimba, a organ minor chord, people talking, pigs, a pipe organ, a Rhodes piano, a saxophone, a sitar, a snare drum, a steel drum, bells, a vibrophone, a violin, a wailing guitar, a horse whinny, and a whistle.

AMICUS Disk 11

C programs

dirutil	Intuition-based, CLI replacement manager S-E
cpri	shows and adjusts priority of CLI processes, S-E
ps	shows info on CLI processes, S-E
vidtex	displays Compuserve RLE pics, S-E

AmigaBasic programs

pointered	pointer and sprite editor program
optimize	optimization ex ample from AC article
calendar	large, animated calendar, diary and date book program
amortize	loan amortizations
brushtoBOB	converts small IFF brushes to AmigaBasic BOB OBJECTS
grids	draw and play waveforms
hilbert	draws Hilbert curves
madlib	mad lib story generator
maitalk	talking mailing list program
meadows3D	3D graphics program, from A C™ article
mousetrack	mouse tracking example in hires mode
slot	slot machine game
tictactoe	the game
switch	pachinko-like game
weird	makes strange sounds

Executable programs

cp	unix-like copy command, E
cls	screen clear, S-E
diff	unix-like stream editor uses 'diff' output to fix files
pm	chart recorder performances indicator

Assembler programs

cls	screen clear and CLI arguments example

Modula-2

trails	moving-worm graphics demo
caseconvert	converts Modula-2 keywords to uppercase
Forth	Breshehan circle algorithm example
Analyze	12 templates for the spreadsheet Analyze

There are four programs here that read Commodore 64 picture files. They can translate Koala Pad, Doodle, Print Shop and News Room graphics to IFF format. Getting the files from your C-64 to your Amiga is the hard part.

AMICUS Disk 12

Executable programs

blink	'alink' compatible linker, but faster, E-D
clean	spins the disk for disk cleaners, E-D
epsonset	sends Epson setttings to PAR from menu E-D
showbig	view hi-res pics in low-res superbitmap, E-D
speaktime	tell the time, E-D
undelete	undeletes a file, E-D
cnvapldhm	converts Apple][low, medium and high res pictures to IFF, E-D
menued	menu editor produces C code for menus, E-D
quick	quick disk-to-disk nibble copier, E-D
quickEA	copies Electronic Arts disks, removes protection, E-D
txed 1.3	demo of text editor from Microsmiths,E-D

C programs

spin3	rotating blocks graphics demo, S-E-D
popcli	start a new CLI at the press of a button, like Sidekick, S-E-D
vsprite	VSprite example code from Commodore, S-E-D
AmigaBBS	Amiga Basic bulletin board prog., S-D

Assembler programs

star10	makes star fields like Star Trek intro,S-E-D

Pictures

Mount Mandelbrot	3D view of Mandelbrot set
Star Destroyer	hi-res Star Wars starship
Robot	robot arm grabbing a cylinder

Texts

vendors	Amiga vendors, names, addresses
cardco	fixes to early Cardco memory boards
cinclude	cross-reference to C include files
mindwalker	clues to playing the game well
slideshow	make your own slideshows from the Kaleidoscope disk

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AMICUS Disk 13

Amiga Basic programs

Routines from Carolyn Scheppner of CBM Tech Support, to read and display IFF pictures from Amiga Basic. With documentation. Also included is a program to do screen prints in Amiga Basic, and the newest BMAP files, with a corrected ConvertFD program. With example pictures, and the SaveILBM screen capture program.

Routines to load and play FutureSound and IFF sound files from Amiga Basic, by John Foust for Applied Visions. With documentation and C and assembler source for writing your own libraries, and interfacing C to assembler in libraries. With example sound.

Executable programs	
gravity	Sci Amer Jan 86 gravitation graphic simulation, S-E-D
Texts	
MIDI	make your own MIDI instrument interface, documentation & a hi-res schematic.

AMICUS Disk 14

Several programs from Amazing Computing issues:

Tools	
Dan Kary's	C structure index program, S-E-D
Amiga Basic programs:	
BMAP Reader	by Tim Jones
IFFBrush2BOB	by Mike Swinger
AutoRequester	example
DOSHelper	Windowed help system for CLI commands, S-E-D
PETrans	translates PET ASCII files to ASCII files, S-E-D
C Squared	Graphics program from Scientific American, Sept 86, S-E-D
crlf	adds or removes carriage returns from files, S-E-D
dpdecode	decrypts Deluxe Paint, remo
ves copy	protection, E-D
queryWB	asks Yes or No from the user returns exitt code, S-E
vc	VisiCalc type spreadsheet, no mouse control, E-D
view	views text files with window and
slider	gadget, E-D

Oing, Sproing, yaBoing, Zoing are sprite-based Boing! style demos, S-E-D

CLIClock, sClock, wClock are window border clocks, S-E-D

Texts

An article on long-persistance phospor monitors, tips on making brushes of odd shapes in Deluxe Paint, and recommendations on icon interfaces from Commodore-Amiga.

AMICUS Disk 15

The C programs include:

'pr'	a file printing utility, which can print files in the background, and with line numbers and control character filtering.
'fm'	displays a chart of the blocks allocated on a disk.
'Ask'	questions an 'execute' file, returns an error code to control the execution in that batch file
'Stat'	an enhanced version of AmigaDOS 'status' command.
'Dissolve'	random-dot dissolve demo displays IFF picture slowly, dot by dot, in a random fashion.
'PopCLI2'	invoke new CLI window at the press of a key.
The executable programs include:	
'Form'	file formatting program through the printer driver to select print styles
'DiskCat'	catalogs disks, maintains, sorts,merges lists of disk files
'PSound'	SunRize Industries' sampled sound editor & recorder
'Iconmaker'	makes icons for most programs
'Fractals'	draws great fractal seascapes and mountain scapes.
'3D Breakout'	3D glasses, create breakout in a new dimension
'AmigaMonitor'	displays lists of open files,
memory use,	tasks, devices and ports in use.
'Cosmoroids'	version of 'asteroids' for the Amiga.
'Sizzlers'	high resolution graphics demo writteN in Modula 2.
Texts:	
'ansi.txt'	explains escape sequences the CON: device responds to.
'FKey'	includes template for making paper to sit in the tray at the top of the Amiga keyboard.
'Spawn'	programmer's document from Commodore

Amiga, describs ways to use the Amiga's multitasking capabilities in your own programs.

AmigaBasic programs:	
'Grids'	draw sound waveforms, and hear them played.
'Light'	a version of the Tron light-cycle video game.
'MigaSol'	a game of solitaire.
'Stats'	program to calculate batting averages
'Money'	"try to grab all the bags of money that you can."

AMICUS 15 also includes two beautiful IFF pictures, of the enemy walkers from the ice planet in Star Wars, and a picture of a cheetah.

AMICUS Disk 16

'juggler' demo by Eric Graham. a robot juggler bouncing three mirrored balls, with sound effects. Twenty-four frames of HAM animation are flipped quickly to produce this image. You control the speed of the juggling. The author's documentation hints that this program might someday be available as a product.

IFF pictures

parodies of the covers of Amiga World and Amazing Computing.

C programs:	
'Inputhandler'	example of making an input handler.
'FileZap3'	binary file editing program
'ShowPrint'	displays IFF picture, and prints it.
'Gen'	program indexes and retrieves C structures and variables declared in the Amiga include file system.
Executable Programs:	
'FixHunk2'	repairs an executable program file for expanded memory
'ms2smus'	converts Music Studio files to IFF standard 'SMUS' format. I have heard this program might have a few bugs, especially in regards to very long songs, but it works in most cases.
'Missile'	Amiga version of the 'Missile Command' video game,

This disk also contains several files of scenarios for Amiga Flight Simulator II. By putting one of these seven files on a blank disk, and inserting it in the drive after performing a special command in this game, a number of interesting locations are preset into the Flight Simulator program. For example, one scenario places your plane on Alcatraz, while another puts you in Central Park

AMICUS Disk 17

Telcommunications disk whuch contains six terminal programs.

"Comm" V1.33	term prog. with Xmodem, WXmodem,
"ATerm" V7.2	term prog. includes Super Kermit
"VT-100"V2.6	Dave Wecker's VT-100 emulator with Xmodem,Kermit, and scripting
"Amiga Kermit"	V4D(060) port of the Unix C-Kermit
"VTek" V2.3.1	Tektronix graphics terminal emulator based on the VT-100 prog. V2.3 and contains latest 'arc' file compression
"AmigaHost"	V0.9 for Compuserve. Includes RLE graphics abilities & CIS-B file transfer protocol.
"FixHunk"	expansion memory necessity
"FixObj"	removes garbage characters from modem received files
"Txt"	filters text files from other systems to be read by the Amiga E.C.
"addmem"	executeable version for use with mem expansion article in AC v2..1
'arc'	file documentation and a basic tutorial on un 'arc'ing files
"arcre"	for makeing "arc" files E.C.

AMICUS Disk 18

Logo	Amiga version of the popular computer language, with example programs, E-D
Tv*Text	Demo version of the TV*Text character generator
PageSetter	Freely distributable versions of the updated PagePrint and PageIFF programs for the PageSetter desktop publishing package.
FullWindow	Resizes any CLI window using only CLI commands, E-D
Life3d	3-D version of Conway's LIFE program, E-D
Defdisk	CLI utility to re-assign a new Workbench disk, S-E-D
Calendar.WKS	Lotus-compatible worksheet that makes calendars
SetKey	Demo of keyboard key re-programmer, with IFF picture to make function key labels, E-D
VPG	Video pattern generator for aligning monitors, E-D
HP-10C	Hewlett-Packard-like calculator, E-D
SetPrefs	Change the Preferences settings on the fly, in C, S-E-D
StarProbe	Program studies stellar evolution. C source included for Amiga and MS-DOS, S-E-D
ROT	C version of Colin French's AmigaBasic ROT program from Amazing Computing. ROT edits and displays polygons to create three dimensional objects. Up to 24 frames of animation can be created and displayed. E-D
Scat	Like Ing, windows on screen run away from the mouse, E-D
DK	Decays" the CLI window into dust, in Modula 2, S-E-D
DropShadow2	Adds layered shadows to Workbench windows, E-D

AMICUS Disk 19

This disk carries several programs from Amazing Computing. The IFF pictures on this disk include the Amiga Wake part T-shirt logo, a sixteen-color hi-res image of Andy Griffith, and five Amiga Live! pictures from the Amazing Stories episode that featured the Amiga.

Solve	Linear equation solver in assembly language, S-E-D
Gadgets	Bryan Catley's AmigaBasic tutorial, S-D
Household	Bryan Catley's AmigaBasic household inventory program, S-D
Waveform	Jim Shields' Waveform Workshop: AmigaBasic, S-D
DiskLib	John Kennan's AmigaBasic disk librarian program, S-D
Subscripts	Ivan Smith's AmigaBasic subscript example, S-D
String, Boolean	C programs and executables for Harriet Maybeck Tolly's Intuition tutorials, S-E-D
Skinny C	Bob Riemersma's example for making small C programs, S-E-D
COMAL.h	Make C look like COMAL header file, S-D
EmacsKey	Makes Emacs function key definitions by Greg Douglas, S-D
AMon 1.1	Snoop on system resource use, E-D
BTE	Bard's Tale character editor, E-D
Size	CLI program shows the size of a given set of files, E-D
WinSize	CLI window utility resizes current window, S-E-D

AMICUS Disk 20

Compactor, Decoder	Steve Michel AmigaBasic tools, S-D
BobEd	BOB and sprite editor written in C,S-E-D
SpriteMasterII	Sprite editor and animator by Brad Kiefer, E-D
BlitLab	Blitter chip exploration C program by Tomas Rokicki, S-E-D
FPic	Image processing program by Bob Bush loads and saves IFF images, changes them with several techniques, E-D
Bankn	Complete home banking prog., balance your checkbook! E-D

AMICUS Disk 21

Target	Makes each mouse click sound like a gunshot, S-E-D
Sand	Simple game of sand that follows the mouse pointer, E-D
PropGadget	Harriet Maybeck Tolly's proportional gadget example, S-E
EHB	Checks to see if you have extra-half-bright graphics, S-E-D
Piano	Simple piano sound program
CelScripts	Makes cel animation scripts for Aegis Animator, in AmigaBasic

This disk has electronic catalogs for AMICUS disks 1 to 20 and Fish disks 1 to 80. They are viewed with the DiskCat program, included here.

AMICUS Disk 22

Cycles	Light cycle game, E-D
Show_PrintII	Views and prints IFF pictures, including larger than screen
PrtDrvGen2.3	Latest version of a printer driver generator
Animations	VideoScape animations of planes and boing ball
Garden	Makes fractal gardenscapes
BasicSorts	Examples of binary search and insertion sort in AmigaBasic

AMICUS Disk 23

An AMICUS disk completely dedicated to music on the Amiga. This disk contains two music players, songs, instruments, and players to bring the thrill of playing "Big Sound" on your Amiga

Instruments	a collection of 25 instruments for playing and creating music. The collection ranges from Cannon to Marimba
List INSTR	program to list the instruments DMCS will not load as well as list the origins for any instrument.
Music	a collection of 14 Classical pieces
1812Overture	The 16 minute classical feature complete with Cannon!

Three Amiga Music Players:
- SMUSPlay
- MusicCraft2SMUS
- MusicStudio2SMUS

AMICUS Disk 24

Sectorama	A disk sector editor for any AmigaDOS file-structured device, recover files from a trashed hard disk. By David Joiner of MicroIllusions
Iconize	Reduces the size of IFF images, companion program, Recolor, remaps the palette colors of one picture to use the palette colors of another. Using these programs and a tool to convert IFF brushes to Workbench icons, make icons look like miniatures of the pictures.
CodeDemo	Modula-2 program converts assembler object files to inline CODE statements. Comes with a screen scrolling example
AmiBug	Workbench hack makes the same fly walk across the screen at random intervals. Otherwise, completely harmless.
BNTools	Three examples of assembly language code from Bryce Nesbitt: 1. SetLace,prog to switch interlace on&off. 2. Why, replace AmigaDOS CLI Why 3. LoadIt, prog to load a file into memory until a reboot. (Only the most esoteric hackers will find LoadIt useful.)
Monolace	CLI program resets Preferences to several colors of monochrome & interlace screens. C source is included, works with DisplayPref, a CLI program which displays the current Preferences settings.
BoingMachine	A ray-traced animation of a perpetual motion Boing-making machine, includes the latest version of the Movie program, which has the ability to play sounds along with the animation. By Ken Offer
Daisy	Example of using the translator and narrator devices to make the Amiga talk. It is written in C.
QuickFlix	Script-driven animation and slideshow program flips through IFF images.
BMon	System monitor AmigaBasic program ; perform simple manipulations of memory.
Moose	Random background program, a small window opens with a moose resembleing Bullwinklesaying witty phrases user definable.
DGCS	Deluxe Grocery Construction Set, simple Intuition-based prog for assembling and printing a grocery list.

The Virus Check directory holds several programs relating to the software virus that came to the US from pirates in Europe as detailed in Amazing Computing V2.12. Bill Koester's full explanation of the virus code is included. One program checks for the software virus on a Workbench disk; the second program checks for the virus in memory, which could infect other disks.

AMICUS Disk 25

Nemesis	Graphics demo pans through space towards the mythical dark twin of the sun with wonderful music and space graphics.

The KickPlay directory holds text that describes several patches to the Kickstart disk. For Amiga 1000 hackers who feel comfortable patching a disk in hexadecimal, KickPlay offers the chance to automatically do an ADDMEM for old expansion memory, as well as the ability to change the picture of the "Insert Workbench" hand. A program is also included for restoring the correct checksum of the Kickstart disk.

KeyBird	BASIC prog edits keymaps, adjust the Workbench keymaps or create your own.
8ColorWB	Modifies the Workbench so three bitplanes are used, icons can have eight colors, instead of four, eight-color icons are included. Public domain program "zapicon" or "brush2icon" converts eight-color IFF brushes to icons, to use Deluxe Paint to make icons for this new Workbench.
BrushIcon	Converts brushes to icons (bizarr docs).
Egraph	Graphing prog reads [x,y] values from a file and displays them on the screen, similar to the same-named Unix program.
Keep 1.1	Message-managing program for telecommunications, lets you save messages from an online transcript to another file, understands the message format of the national networks and several types of bulletin board software. Moves through the transcript and save messages
Kill.fastdir	Speed up directory access, it creates a small file in each directory on a disk which contains the infor-mation about the files, will also remove all the "fastdir" files from each directory. by CLImate's authors

The LaceWB program changes between interlace and non-interlace Workbench. Previously, you were forced to reboot after changing Preferences to an interlaced screen. This program flips between the normal and extended screen heights.

PW_Utility	A shareware utility for ProWrite users, changes margin settings and font types.
Guru	A CLI program, prints out probable causes for Guru mediations; C source included.
DiskWipe	Latest from Software Distillery, removes files from directories or disk drives, much faster than "delete."
Snow	AmigaBasic makes snowflake designs.
Mlist	Mailing list database.
Softballstats	Maintain softball statistics/ team records.
Dodge	Short Modula-2 program moves the Workbench screen around after a period of time, prevents monitor burn-in.

AMICUS Disk 26

Todor Fay's SoundScape module code from his Amazing Computing articles. The source to Echo, Chord, TX, and VU is included. The Lattice and Manx C source code is here, along with the executable modules.

Claz2	Update of prog to convert IFF images to PostScript files for printing on laser printers
SDBackup	Hard disk backup prog with Lempel-Ziv compression to reduce the necessary number of disks.
TCB	Prints information about tasks and processes in the system; assembler source is included.
FunBut	Lets a function key act like a rapid series of left mouse button events.
DC	A handy program for people who use an Amiga 1020 5 1/4 inch drive as an AmigaDOS floppy. A Workbench program that sends a DiskChange signal to the operating system: instead of typing "diskchange df2:" over and over again, just click on the icon. C source included.
System config	File makes screen 80 columns wide of text in the Scribble! word processor.
Dick2Ram	2 programs to move the Scribble! spelling dictionary to and from the RAM disk.
Lexical	Analyzes a text file and gives the Gunning-Fog, Flesch, and Kincaid indices which measure readability.
HexDump	Modula-2 program to display memory locations in hexadecimal.
Tartan	AmigaBasic; design Tartan plaids.
DirMaster	Disk catalog program.
BMP	plays 8SVX sampled sounds in the background while something else is happening in the Amiga, as your Amiga is booting, for example.
ShowPt	CLI program changes your pointer to a given pointer.

AMICUS 26 also has a collection of mouse pointers, & Workbench program to display them

The Fred Fish Collection

Due to the increasing size of the Fred Fish Collection, only the latest disks are represented here. For a complete list of all AC, AMICUS, and Fred Fish Disks, cataloged and cross-referenced for your convenience, please consult the current *AC's Guide To The Commodore Amiga* available at your local Amazing Dealer.

Fred Fish Disk 291

GMC	A console handler with command line editing and function key support. GMC provides extended command line editing, function key assignment in four levels, extended command line history, online help for functions in the handler, and an iconify function. Version 4.0, binary only. Author: Gotz Muller
Keyboard	Functions to translate RAWKEY Intuition messages into usable keycodes. Includes source. Author: Fabbian Dufoe
Sim	A simulator for register-transfer nets, which are used to describe hardware systems. This version also provides a compiler to define new devices in addition to Sim's internal devices. V4.2, an update to FF229. Binary only. Author: Gotz Muller
SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V1.2, an update to FF279, where it was called ash. Binary only. Author: Steve Koren

Fred Fish Disk 292

Devstat	Assembly code example of locating and listing information about all mounted devices. Includes source. Author: Fabrice Lienhardt
FileRequest	Assembly code example of a file requester. V2.0, an update to FF173, where it was called FileSelect. New features include 3 speed scrolling of filenames and ghosting of unavailable devices. Includes source. Author: Fabrice Lienhardt
MultiPlot	A package for making 2D plots conveniently. Tim Mooney wrote the original program, which was then enhanced by Alan Baxter with a nicer user interface, support for the PLT: device, and support for file conversions. Rich Champeaux and Jim Miller wrote the PLT: handler which emulates a plotter by accepting HP-GL commands, creating a raster image, then dumping it to any preferences supported graphics printer. This is version XLN and includes source to MultiPlot. Update to FF231, where it was called just "Plot". This version is 2D only. Author: Alan Baxter, Tim Mooney, Rich Campeaux, Jim Miller

Fred Fish Disk 293

ClockDJ	A utility which combines a clock, mouse accelerator, screen blanker, window manipulator, function keys, and macros into a single program, written in assembly language for maximum efficiency. Includes an ARexx port. Version 4.07, binary only. Author: David Jenkins
CrcLists	Complete CRC check files for disks 001-292 using the brik program. These were made directly from my master disks. I have switched to brik, from the crc program used to make the lists on disks 133, 146, and 173, because it has more features and because source is available. Update to FF233. Author: Fred Fish

Fred Fish Disk 294

DNet	A link protocol that provides essentially an unlimited number of reliable connections between processes on two machines, where each end of the link can be either an Amiga or a Unix (BSD4.3) machine. Works on the Amiga with any EXEC device that looks like the serial.device. Works on UNIX with tty and socket devices. Achieves better than 95% average throughput on file transfers. V2.10.13, an update to FF220. Includes sources for both the Amiga and Unix versions. Author: Matt Dillon
FmsDisk	A file based trackdisk simulator, useful for creating a floppy-like partition on your hard disk (so you can diskcopy to a floppy) without actually having to create a special partition for it. Also useful for testing new filesystems and such. Supports up to 32 units, with either the old filesystem or the new fast filesystem. Includes source. Author: Matt Dillon

Fred Fish Disk 295

GnuGrep	The grep program from the GNU project. Replaces grep/fgrep, egrep, and bmgrep. Currently does not expand Amiga style wildcards, so if you wish to scan multiple files you will need to use it with a shell that does this for you. This is version 1.5, an update to version 1.3 on disk 204. Includes source. Author: Many (see README file)
Lhwarp	A program which will read tracks directly from your floppy disk, compress them using adaptive huffman encoding, and output them to a file. The resulting file can be used by lhwarp to reconstruct an image of the original disk. This is version 1.03 and includes source. Author: Jonathan Forbes
MandelMountains	A program that renders three-dimensional images of blowups of the Mandelbrot set. Includes several example images. Version 1.1, shareware, binary only. Author: Mathias Ortmann

Fred Fish Disk 296

Comal	Demo of AmigaCOMAL (missing only SAVE), an incremental p-code compiler from Denmark. COMAL is a language with the design goal of combining the modern structured approach of Pascal with the ease of use and interactivity of BASIC. There are versions of COMAL for IBM, VAX, CP/M, C-64, Amiga and various European operating systems. Includes a complete turtle graphics package. Is perfect for education yet powerful enough for applications programming. Version 2.0, binary only. Author: Svend Daugaard Pedersen Freddy Dan Dalgas Kristiansen
Patch	A port of the very useful UNIX utility which applies context diffs to text files to automatically update them. This is a port of version 2.0.1.6 (patch level 12), which Eric has dubbed Amiga version 1.0. It is an update to an earlier version on disk 129. Includes source. Author: Larry Wall, Amiga port by Eric Green

Fred Fish Disk 297

Clean	A small program written in assembly code, to be used in conjunction with a cleaning disk, to clean your floppy drive heads. Version 1.0, includes source. Author: Dan Burris
DevKit	A collection of C and ARexx language programs to facilitate the software development process. With DevKit, you can launch your compiler from within your editor, have the cursor positioned on your errors, look up the autodoc page for any Amiga function at a single keystroke, find a system structure within the include files, or find any function in the code you are writing. Version 1.2, includes source. Author: Peter Cherna
Elements	Very nice interactive display of the the Periodic Table of Elements. Can display a large amount of pertinent data about a selected element along with a good deal of general and miscellaneous info. V 1.3, update to FF253. It adds a non-interlace mode and extend selection of two elements. Binary only, shareware. Author: Paul Thomas Miller
Hypno	A "bouncing polygons" type program like Mackie, LineArt, and Bezier. Includes source in C. Author: Markus Schmidt
Jed	A nicely done, intuition-based editor that is quite user-friendly. Features word-wrap, auto-indent, newcli, alt buffer, split-window, keyboard macro, help, printing, and more. V1.1, Update to FF180. Shareware, binary only. Author: Dan Burris
SuperMenu	An information display system you can use to quickly and easily display text files (and sections of text files) with the press of a button. Version 1.62, shareware, binary only. Author: Paul Thomas Miller
WriteIcon	Sample code that creates an icon using a compiled-in image, the source of which can be created with Icon2C on FF56. Version 1.0, includes source in C. Author: Dan Burris

Fred Fish Disk 298

BBChampion	This is BootBlockChampionIII, a very nicely done program that allows you to load, save, and analyze any bootblock. V3.21, an update to FF244. New features include checks for five different LAMER viruses and some other enhancements. Binary only. Author: Roger Fischlin
DClock	A "Dumb Clock" utility that displays the date and time in the Workbench screen title bar. Uses only about 2 percent of the CPU time and about 10Kb of memory. Also has an alarm clock feature and audible beep for programs that call DisplayBeep. Version 1.5, includes source. Author: Olaf Barthel
Fenster	A program which can operate on windows owned by another program, to close them, change their size, refresh gadgets, move the window to the background, etc. V2.0, an update to FF245. Includes source. Author: Roger Fischlin
FileMaster	A file editor like NewZap or FedUp, which allows you to manipulate bytes of a file. You may also change the file size or execute a patch. Version 1.11, includes source. Author: Roger Fischlin

Fred Fish Disk 299

Hangman	A simple hangman program similar to one seen on some UNIX machines. Currently runs only from CLI. Includes source in C. Author: Gary Brant
Rxil	An ARexx interface library that makes it easy for programs to implement a complete, robust ARexx interface with minimal effort. Version 1.0, includes source. Author: Don Meyer
SceneGenDemo	Demo of a program called Scene Generator, that generates very realistic looking landscapes. This program is an enhanced, low cost commercial version, of the Scenery program included on disk 155. This is version 2.03, binary only. Author: Brett Casebolt
Yacc	This is a port of Berkeley Yacc for the Amiga. This Yacc has been made as compatible as possible with the AT&T Yacc, and is completely public domain. Note that it is NOT the so-called Decus Yacc, which is/was simply a repackaging of the proprietary AT&T Yacc. Amiga version 1.0a, includes source. Author: Bob Corbett, Amiga port by Eric Green

Fred Fish Disk 300

SuperEcho	A neat program to be used with Perfect Sound-like audio digitizers that generates LIVE audio effects, including Echos, Deep Voice, Squeaky Voice, Many People, M-M-Max Headroom and much more. Binary only. Author: Kevin Kelm
TACL	An adventure player for games written with The Adventure Construction Language, a commercial computer language. Includes two sample games; one is text-only and the other is text-graphic. Binary only, plus the TACL source code that was used to write the graphic adventure. Author: Kevin Kelm and Rhett Rodewald
TitleGen	A simple script language program for generating vertically crawling title sequences in any font and up to 500 lines long. Good for video production. Version 1.6, binary only. Author: Kevin Kelm
XenoZap	A program that recursively descends into directories, disabling the Xeno virus in all executable files that it finds. Version 1.0, includes source in Modula-2. Author: Kevin Kelm

Fred Fish Disk 301

Aquarium	A program for searching through a special database containing information about the contents of the library, in order to find programs that match a specified list of conditions. Includes a database of disks 1-300, and a program to add the contents of future disks to the database. Binary only. Author: B Lennart Olsson
IffLib	A ready-to-use library to perform various manipulations on IFF files. Includes a sample IFF viewer and a utility to save the front screen as an IFF file. This is version 16.1, an update to version 15.3 on disk 173, and includes a couple of bug fixes and some new features. Binary only. Author: Christian A. Weber
UeditUpdate	This is a partial update to the 2.5d version of Uedit on disk 286. It includes only the UES executable, which has had patches d1 through d4 applied. Disk 286 is still needed for a complete Uedit shareware distribution. Binary only. Author: Rick Stiles

Fred Fish Disk 302

Chop	A program which uses a hotkey to chop a displayed screen down to a temporary maximum of 4 planes in lo-res or 2 planes in hi-res, allowing the processor full speed access to chip memory. Only the displayed screen is affected, the program painting the screen continues to work with the full color palette. Unchoping the screen puts everything back to normal. Version 1.0, binary only. Author: Nico Francois
DiskTalk	A cute little program, like "muncho" on disk 137, which plays digitized sound samples when you insert or remove a floppy disk. Samples are saved as IFF sound files. Version 1.0, binary only. Author: Nico Francois
MiscUtils	Some small sound and screen hacks. Includes source in C. Author: Jorrit Tyberghein
PPMore	Another "more" like utility. This one reads text files that have been crunched with PowerPacker, thus saving space at the slight expense of some time to uncrunch the text. Version 1.3, binary only. Author: Nico Francois
ProgUtils	Some miscellaneous programming utilities and examples. Includes source in assembly code. Author: Jorrit Tyberghein
QuickHelp	A utility that helps you make and display your own help files for commands. Disk space usage is minimized by using PowerPacker to crunch the help files. Version 1.2, binary only. Author: Jorrit Tyberghein
RollOn	A "Soko-Ban" like shareware game, submitted by the author. Includes both English and German versions, a level editor, and digitized sounds. This is version 1.1, binary only. Author: Tobias Eckert
Selector	A program that helps you assemble programs on a boot disk and start them in a user friendly way. Version 2.5, binary only. Author: Nico Francois
TurboMandel	A fast mandelbrot program, written in a mix of C and assembly language. You can select between using floating point or integer calculation. Other features include a full intuition interface, cycling capabilities, extensive color control, a user definable iteration depth, fully implemented zoom, a 3-D display mode, support for extra halfbrite as well as interlace and hires, IFF load and save, accuracy selections, and more. Version 1.0, includes source in assembly and C. Author: Marivoet Philip

Fred Fish Disk 303

CPM	A program to compute mandelbrots via the Continous Potential Method, as described in the book "The Science of Fractal Images" by H. O. Pietgen and D. Saupe. It is used to make 3-dimensional pictures of the mandelbrot set. This is a batch mode type program so several images can be generated, one after the other, without any human interaction. Includes source. Author: Lars Clausen
DEM	A program to compute mandelbrots via the Distance Estimator Method, as described in the book "The Science of Fractal Images" by H. O. Pietgen and D. Saupe. It is used to make high resolution black-and-white images. This is a batch mode type program so several images can be generated, one after the other, without any human interaction. Includes source. Author: Lars Clausen
Demon	This program implements the Demons cellular automaton as described in the August, 1989, issue of Scientific American. Using extremely simple rules it exhibits rather complex behaviour. Includes source. Author: Lars Clausen
FixIcons	A program to scan through all files in a given volume or directory, looking for project icons and changing their default tools according to instructions given in a script file. Version 1.2, includes source. Author: Lars Clausen
IceFrac	A fractal generator using the Diffusion Limited Aggregation algorithm, as described in the book "The Beauty of Fractal Images". This is version 2.1 and includes source. Author: Lars Clausen
Rocket	Another program in the long tradition of screen hacks. This one zeroes in on your mouse pointer. Binary only. Author: Lars Clausen
ScreenZap	A utility that forcibly removes screens and windows from your system. Useful to get rid of zombie screens or windows that have been left around by aborted or buggy programs. This is version 2.3 and includes source. Author: Lars Clausen
SnowFall	Another program in the long tradition of screen hacks for the amiga. Watch the snow fall, get blown around by the wind, and collect in realistic heaps. Includes source. Author: Lars Clausen

Fred Fish Disk 304

Circles	A circles pattern generator, reminiscent of one of the early Amiga demos. Version 1.1, includes source in C. Author: Joel Swank
DocSplit	A program to split the 1.3 autodoc files into individual subroutine files. One file is created for each subroutine, with the name created by appending ".doc" to the subroutine name. Version 1.0, includes source. Author: Joel Swank
Gears	A program to calculate and display the gears of a multispeed bicycle. Works for bicycles with 3 to 21 gear combinations. Version 1.1, includes source. Author: Joel Swank
IRA	Allows easy calculation of future values of investment. Enter the beginning investment value, annual percentage rate, annual deposit amount, and number of years, to compute the future value. Version 2.0, includes source. Author: Joel Swank
Lines	A color line pattern generator, adapted from Mackie. Version 1.1, includes source. By: Joel Swank
Mean18	2 custom golf courses for Mean 18. By: Joel Swank
Multic	Formats a single column of input into multiple side by side columns. Includes source. By: Joel Swank
PageCnt	Counts and displays the number of form feeds in a file, along with the length of the longest line. Version 1.0, includes source. Author: Joel Swank
Skel	A skeleton workbench application that makes writing workbench programs easier. Provides routines for main, initialization and termination, gadget and menu handling, argument processing, help window, about requester, etc. Version 1, includes source. Author: Joel Swank
SuperRetLab	Prints return address labels 3-up on single-wide 3.5 inch by 7/16/ inch label stock. Can print up to 5 lines per label. Version 1.1, includes source. Author: Joel Swank
Verify	Walks a directory hierarchy reading all files, reporting any files that can't be entirely read. Version 1.2, includes source. Author: Joel Swank

Fred Fish Disk 305

Fenster	A program which can operate on windows owned by another program, to close them, change their size, refresh gadgets, move the window to the background, etc. This is version 2.1, an update to version 2.0 on disk 298. Includes source. Author: Roger Fischlin
Lhwarp	A program which will read tracks directly from your floppy disk, compress them using adaptive huffman encoding, and output them to a file. The resulting file can be used by lhwarp to reconstruct an image of the original disk. This is version 1.20, an update to version 1.03 on disk 295. New features include much faster compression/decompression, a 32-bit CRC, and two additional compression methods. Binary only. Author: Jonathan Forbes
Mackie	A versatile cli/macro-key initiator based on POPCLI with a unique method of "screen-blanking". I won't say more, just try it! This is version 1.4, an update to version 1.3 from disk 267. Includes fixes to work with latest WShell and the new 'never' keyword. Includes source. Author: Tomas Rokicki
Obsess	Obsess-O-Matic is a real-time puzzle game like Tetrix where the object is to fit the falling pieces together to form complete horizontal rows. Features such as burning, exploding, and invisible pieces enhance game play. Other features such as a puzzle piece editor are included in the version available directly from the author. This is version 1.0, shareware, binary only. Author: Wayne Phillips

AC's GUIDE To The Commodore AMIGA

AC's Guide lists the descriptions and
contents of over 330
Freely Distributable Software
disks as well as
over 2400 Amiga products.
On Sale Now
at an your local Amazing Dealer

PrFont	Prints a sample of each font from the fonts: directory. Draws one line of each font on a custom hires screen, which can be printed. Version 1.3, includes source. Author: Joel Swank
Reversi	Plays the classical reversi game on an 8 x 8 square field. Version 2.0, an update to FF245. Includes source in assembly language. Author: Marc Fischlin
SpaceLog	A database containing data for all of the man related space missions of the United States and the Soviet Union that were related to the development of manned space flight, from the beginning of the space age to the present (368 missions), listed in chronological order. Includes an AmigaBASIC program to manipulate the database. Version 1.54, binary only. Author: Gene Heitman

Fred Fish Disk 306

Life	A new version of Tomas's Life game. This version includes a new torus option, an option to perform calculations with the processor rather than the blitter, and a couple of other minor changes. This is an update to the version on disk 131, includes source. Author: Tomas Rokicki
RexxPlPlot	A library of C functions useful for scientific plotting on the Amiga. The library is Lattice C compatible. Contour plotting, three dimensional plotting, axis redefinition, log-log plotting and multiple subpages are a few of Plplot's features. The plots can be displayed on a monitor or sent to a graphics file for subsequent printing. This is RexxPlPlot version 0.3, an update to Plplot version 1.00 on disk 222. New features include an ARexx interface, support for IFF output, support for PostScript output, support for Preferences, some new functions, bug fixes, and more. Includes source. Author: Tony Richardson, Samuel Paolucci, Glenn Lewis and Tomas Rokicki
Tree	A very simple directory tree traversal program, written primarily as an aid to creating zoo archives and disk backups. Has options to exclude certain directories or files with specific extensions. Includes source. Author: Tomas Rokicki

Fred Fish Disk 307

DissiDemos	Demo of Midi Sample Wrench, which provides pro sample editing features for owners of musical samplers. Version 1.1, binary only. Author: Jeff Glatt
FileIO	A disk based shared library to make filename selection easy for load and save routines using an Intuition interface. This is version 1.5, and update to the version on disk 257. Now includes the ability to select multiple filenames and fixes some bugs in the 1.4 version. Binary only. Author: R. J. Mical, Jeff Glatt and Jim Fiore
Samp	Documentation and interface library for an IFF FORM "SAMP", 16-bit sampled sound file format. This format allows more than one waveform per octave, and the lengths of different waveforms do not have to be factors of 2. Includes a utility to convert 8SVX files to SAMP format. Version 1.0, binary only. Author: Jeff Glatt

Fred Fish Disk 308

FReq	A general purpose file requester, which was designed to be easy to use and fast, with a built-in ARexx port allowing you to use it from ARexx scripts or applications with ARexx ports. Version 1.0, binary only. Author: Jeffrey D. Wahaus
ScreenShare	A library and support programs that enable applications to open up windows on other applications' custom screens. For example, your editor may want to open a window on your terminal emulator's screen so you can compose a message while still being able to see the contents of the terminal's screen. Both applications must cooperate for the screen sharing to work. This is version 1.21, an update to version 1.2 on disk 246. Includes source for interface portions. Author: Willy Langeveld
StarBlanker	A screen blanker that replaces your display with a randomly chosen animated starfield. Version 1.00, includes source in Modula-2. Author: Chris Bailey
Vlt	VLT is both a VT100 emulator and a Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC (Stanford Linear Accelerator Center). Although the VT100 part was originally based on Dave Wecker et al.'s VT100, many enhancements were made. Features include use of ARP, an ARexx port, XMODEM 1K/CRC and Kermit protocols, support for additional serial ports, external file transfer protocols (XPR), a "chat" mode, and scrollback/review/history buffer. It comes in two versions, one with Tektronix emulation, and one without. The Tektronix emulation allows saving IFF files, PostScript files, and printing bitmaps to the printer. This is version 4.428, an update to version 4.226 on FF257. The major change for this update is a rewrite of the Tektronix emulation to support almost all of the Tektronix 4105 escape sequences. Binary only. By: Willy Langeveld

Fred Fish Disk 309

Bind	A binding (glue) library builder. Takes a standard '.fd' (function definition) file and generates a binding library for the functions defined in the '.fd' file. Version 1.2, an update to the version released with midilib on FF227. Binary only. Author: Bill Barton
Csh	Version 4.00a of a csh like shell derived from Matt Dillon's shell, version 2.07. This is an update to FF223. Changes include ARP pattern matching, improved search command, some new commands like 'basename', some new options, bug fixes, and an ARexx port. Includes source. Author: Matt Dillon, Steve Drew, Carlo Borreo, Cesare Dieni
SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. Version 1.3, an update to FF291. Binary only. Author: Steve Koren

Fred Fish Disk 310

Mon	A machine code monitor/debugger program for the Amiga which is re-entrant and can be made resident. This is version 1.24, binary only. Author: Timo Rossi
UUCP	An implementation of uucp for the Amiga, including mail and news. This is Matt's version 1.00 for the Amiga, based on William Loftus's Amiga UUCP 0.40 release with news code from his 0.60 release, and months of work by Matt Dillon to make fixes and add enhancements. Includes source. Author: Various, major enhancements by Matt Dillon

Fred Fish Disk 311

CRobots	A game based on computer programming. Unlike arcade type games which require human input controlling some object, all strategy in CRobots is condensed into a C language program that you design and write, to control a robot whose mission is to seek out, track, and destroy other robots, each running different programs. All robots are equally equipped, and up to four may compete at once. Version 2.1w, binary only, source available from author. Author: Tom Poindexter, Amiga version by David Wright
Echo	Echo is a replacement for the AmigaDOS or ARP echo command. This version provides easy color setting or positioning for all echo'ed strings. Completely compatible with the AmigaDOS and ARP echo commands, all your old batch files should work correctly. Version 1.08c, includes source. Author: George Kerber (based on echo by Garry Glendown)
Etime	Etime will display the elapsed time between events. This is useful in scripts to display the elapsed time between the beginning and ending. Many options including color and time displayed as hh:mm:ss or total seconds. Version 1.05c, includes source. Author: George Kerber
Fortune	Fortune will ramdomly display a 'fortune' selected from the fortunes file (supplied). The 'fortunes' file is easily modified or added to by the user, using any text editor. Fortune provides color and speech by user option. Version 2.04c, includes source. Author: George Kerber
Incr	Incr will easily allow the user to keep a total count of any event run from a batch file. Incr will take a number from a file, increment it by one and display the result. The new count is written back to the file. Version 1.04b, includes source. Author: George Kerber
PKAZip	The PKWare ZIP tool for the Amiga. Provides functions to create, examine, extract, test, modify, display, and print files which are in the ZIP compressed format Uses a full Intuition interface with no CLI support. Version 01.00, binary only. Author: PKWARE Inc, Amiga version by Dennis Hoffman
Udate	Udate is a replacement for the AmigaDOS date command, containing many options similiar to the UNIX date command. Udate will allow you to set the date and time via prompts or directly from the command line, will display any part of the date or time using the options in any color desired, and will also make an automatic adjustment of your system clock for Daylight Savings Time so your computer will be one less clock you will ever have to set twice a year for DST. Version 1.15c, includes source. Author: George Kerber

Fred Fish Disk 312

ChinaChallenge	A game similar to Shanghai or Mahjong. The goal is to remove all parts of the pile, the so called Dragon, step by step. This dragon is composed of 120 different game pieces. You can always find four pieces displaying the same picture or chinese symbols. Binary only. Author: Dirk Hoffmann
LHArc	An archive program like Arc and Zoo, with a heavy emphasis maximum compression for minimum archive size, using LZHUF compression. This is version 1.10, an update to version 1.0 on disk 289. Changes include 20-50% faster compression, 17% faster decompression, file sorting, more efficient use of memory, a new progress indicator display, and some bug fixes. Binary only. Author: Paolo Zibetti
Moonbase	You must guide a lunar lander to ferry cargo from an orbiting space station to bases on the surface of the moon. You get cargo and fuel for the lander by docking with the space station. The goal is to complete all the assigned cargo deliveries, and to destroy as few landers as possible in doing so. Binary only. Author: Jim Barber
TrackSalve	A trackdisk patch which removes all known bugs and patches the trackdisk task to allow various enhancements, such as reading good sectors from partially bad tracks, write verification, write protect simulation, and turning off clicking. Version 1.0, includes source in C and assembler. Author: Dirk Reisig

Fred Fish Disk 313

UUCP	An implementation of uucp for the Amiga, including mail and news. This is Matt's version for the Amiga, based on William Loftus's Amiga UUCP 0.40 release with news code from his 0.60 release, and months of work by Matt to make fixes and add enhancements. This is version 1.03D, an update to version 1.00 on disk 310. Includes source. Author: Various, major enhancements by Matt Dillon

Fred Fish Disk 314

A68k	A 68000 assembler originally written in Modula-2 in 1985 and converted to C by Charlie Gibb in 1987. Has been converted to accept metacomco-compatible assembler source code and to generate Amiga objects. Includes source. This is version 2.61, an update to the version on disk 186. Author: Brian Anderson; C translation and Amiga work done by Charlie Gibb
Zc	A full K&R C compiler based on a port of the Atari ST version of the Sozobon-C compiler. Includes the C compiler main pass written by Johann Ruegg with fixes and enhancements by Joe Montgomery and Jeff Lydiatt, a cc front end written by Fred Fish with enhancements by Jeff Lydiatt and Ralph Babel, an optimizer written by Tony Andrews, an assembler written by Brian Anderson and Charlie Gibb, a linker written by the Software Distillery, generic include files, and a C runtime library written by Dale Schumacher and ported by Jeff Lydiatt. This is version 1.01, an update to disks 171 and 193. Author: Various, see documentation.

Fred Fish Disk 315

AmigaFox	A text processor with graphics capabilities. Version 1.00, binary only. Author: Michael Wust
Drawmap	A program for drawing representations of the Earth's surface. Can generate flat maps, mercator maps, globe views and orbital views. This is version 2.0, an update to version 1.0 on disk 229. Enhancements include dropshadows, user text entry and placement, improved event processing and better looking mouse pointers. Includes source. Author: Bryan Brown
Surf	Generates bezier surfaces of revolution. Will produce some amazing pictures of wineglasses, doorknobs, or other objects one could turn on a lathe. Includes the capacity to map IFF image files onto any surface that it can draw. This is version 2.0, an update to version 1.0 on disk 170. Changes include support for data file formats that can be translated to input files for various 3D modeling programs, an increase in the number of grey shades available, and the capability of modifying the endpoints of segments. Source included. Author: Eric Davies

Fred Fish Disk 316

Formulae	An implementation of basic propositional formulae manipulation routines in Scheme (Scheme is available on disk 149). Uses only essential procedures so it should run under any Scheme. Includes source in Scheme. Author: Gauthier Groult and Bertrand Lecun
Iff2C	Yet another IFF ILBM to C converter. Two unique features are the ability to generate comments representing the actual image, and the planepick computation. This is version 0.30 and includes source. Author: Gauthier Groult and Jean Michel Forgeas
IntuiSup	A shared library which implements extensions to the Amiga operating system and graphical environment. Includes several example programs that make use of the library, including building a nifty file requester from the library's user interface routines. Version 1.15, binary only. Source available from author. Author: Gauthier Groult
Life	Another version of Tomas's Life game. Includes a torus option, an option to perform calculations with the processor rather than the blitter, and more. This is version 5.0, an update to the version on disk 306, and is about 15% faster. Includes source. Author: Tomas Rokicki
SmartIcon	This shareware program, submitted by the author, is an Intuition objects iconifier. Version 2.0 is still limited to iconifying windows, which is still very handy. It adds a new "iconify gadget" to each window, that when clicked on, iconifies the window into an icon in the ram: disk. This is version 2.0, an update to version 1.0 on disk 214. Includes source. Author: Gauthier Groult
Vectors	A simple program to test how fast the Amiga can draw lines. Includes two versions, 1.0 and 1.1, each of which performs tests slightly differently. Includes source. Author: Gauthier Groult and Jean Michel Forgeas

Fred Fish Disk 317

StillStore	A program designed for freelance, corporate, and broadcast television. It loads and displays IFF images of any resolution interchangeably from a list file or as inputted directly (I.E. random access). The user may easily skip forward or backward one or more pictures in the list. A "generic" display is always just a few seconds away. The program can be used "on air" with no concern that a pull down menu will suddenly appear in the viewable area. It also provides for a precise cue for changing windows or screens. While the main purpose is to load "news windows" of 1/4 screen size, StillStore can also handle full-sized and overscanned images. Also includes slide show modes and a screen positioning feature. Stillstore is written in the Director language from the Right Answers Group. Version 1.2, binary only, source available from authors. Author: R. J. (Dick) Bourne and Richard Murray
Uniq	A text processor which compacts repeated adjacent lines. Intended to be used with a sorted file to print unique lines, or repeated lines. Behaviour and options like UNIX version. Version 1.1, includes source. Author: John Woods, Amiga port by Gary Duncan

Fred Fish Disk 318

CNewsBin	This is part 1 of a C News distribution for the Amiga. This part includes all the binary and text files necessary to set up and run C News. Part 2 is available on disk 319 and contains the source. Author: Various, Amiga port by Frank Edwards
Lhwarp	A program which will read tracks directly from your floppy disk, compress them using adaptive huffman encoding, and output them to a file. The resulting file can be used by lhwarp to reconstruct an image of the original disk. This is version 1.21, an update to version 1.20 on disk 305. Binary only. Author: Jonathan Forbes
PKAZip	The PKWare ZIP tool for the Amiga. Provides functions to create, examine, extract, test, modify, display, and print files which are in the ZIP compressed format Uses a full Intuition interface with no CLI support. This is version 1.01, an update to version 1.00 on disk 311. Binary only. Author: PKWARE Inc, Amiga version by Dennis Hoffman
WaveMaker	WaveMaker is intended to give beginning music and physics students a "hands on" feel for how complex waves are made by adding a harmonic series of sine waves. A fundamental and up to seven harmonics are available. The resulting waveform can be displayed on the screen or played on the audio device using the keyboard like a piano. A game mode is also provided. Version 1.1, includes source. Author: Thomas Meyer
Xoper	Very comprehensive program to monitor and control system activity. Monitor cpu, memory usage, ports, interrupts, devices. Close windows, screens, show loaded fonts or last Guru code number. Clean up memory, flush unused libraries, devices, fonts. etc. and a whole bunch more! Spawns its own process. A very handy background task to have loaded. This is version 2.2, an update to version 2.0 on disk 274. Changes include mostly bug fixes and some minor enhancements. Assembly source included. Author: Werner Gunther

Fred Fish Disk 319

AHDM	Amiga Hard Disk Menu. When placed in your startup sequence, AHDM offers a ten page menu, each page having up to ten possible actions. By double clicking on an action, that action will execute any legal AmigaDOS command, program, or script file. This allows you to interactively select which programs you wish to start or packages to install at boot time. Version 1.1a, binary only, demo version that only supports 2 pages of actions. Author: Scott Meek
CNewsSrc	This is part 2 of a C News distribution for the Amiga. This part includes all the source for C News and the UUPC package that it uses. Part 1 is available on disk 318 and includes all the binary and text files necessary to set up and run C News on the Amiga. Author: Various, Amiga port by Frank Edwards
Mathtrans	A very small library which replaces the mathtrans.library distributed by Commodore-Amiga, for those who own an MC68881/82 floating point unit. Calculation speed of some functions is increased up to 15 times. Version 1.1, includes source. Author: Heiner Huckstadt

Fred Fish Disk 320

AmigaTrek	A continuation of Mike's Amiga Trek stories, which are parodies of the Star Trek series, with an Amiga flavor. Earlier stories are on disk 278. Author: Mike Smithwick
AmiOmega	Amiga port of the Omega game. Omega is similar to hack or rogue, but is much more complex. There is a city, several towns, a wilderness, lots of dungeons, a multitude of monsters, lots of spells, magic items, etc. There are several quests to complete. All in all, it is an excellent game. Requires 1Mb or more of memory. Amiga version 1.0, binary only. Author: Laurence Brothers, Amiga port by Rick Golembiewski

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Fred Fish Disk 321

DezHexBin	An intuition based programmers tool to convert integers between decimal, hexadecimal, and binary. Very small. Version 1.1, includes source in assembly code. Author: Michael Djavidan
IconJ	IconJ significantly enhances the IconX program, and is 100% compatible. It allows scripts to be executed by double-clicking the script's icon. Abilities include joining the script with the icon file itself, or calling it from any directory or disk, executing either AmigaDOS or ARexx scripts, outputing to any file or device, running interactive scripts and scripts that contain conditionals, and creating relative console windows. Includes a utility called AtatJ which attaches or detaches a script to/from an icon file. Version 1.0, includes source in JForth. Author: Rich Franzen
Ifs	An Iterated Function System viewer which graphically displays iterated function systems and allows the user to interactively create the affine functions that define such systems. An IFS can represent complex pictures very compactly. Simple IFSs can describe an infinite number of different and interesting fractal displays. Includes a number of displays that the author and others have discovered. Version 1.5, includes source in C. Author: Glen Fullmer
Planets	Some routines ported to the Amiga by Bob Leivian, that compute the location of the planets (as viewed from a specific point on the earth) and the phase of the moon, for an arbitrary date and time. Includes source. Author: Keith Brandt VIII, Jim Cobb, F. T. Mendenhall, Alan Paeth, Petri Launiainen, Bob Leivian
Turtle	A shared library of "turtle" functions for drawing in a RastPort. Includes source in assembly and C. Author: Thomas Albers
UnixDirs	A program which intercepts calls to dos.library to add the UNIX style '.' and '..' syntax for current and parent directories, respectively, to file and path names. I.E., you can refer to files in the current directory as './foo' and files in the parent directory as '../foo', or any combination of the two. Includes source in assembly. Author: Murray Bennett and Mark Cyster
Whereis	Another "find-that-file" utility. Whereis searches on your (hard-)disk for a file(name) and displays the path to that file. Some features are case independent search, wildcards, interactive mode (cd implemented), can display size and date of files, always abortable, can archive filenames for "ZOO" (like fnams/recurdir), and no recursive procedures. Includes source in C. Version 1.18 (2-15-90). Author: Roland Bless

Fred Fish Disk 322

Gwin	This is version 1.0 of GWIN. GWIN or Graphics WINdow is an integrated collection of graphics routines callable from C. These routines make it easy to create sophisticated graphics programs in the C environment. One-line calls give you a custom screen (ten types available), menu items, requestors, text, circles, polygons, etc. GWIN is a two-dimensional floating point graphics system with conversion between world and screen coordinates. GWIN includes built-in clipping that may be turned off for speed. Use of color and XOR operations are greatly simplified. Many examples of the use of GWIN are included in an examples directory. Examples include line/bar graph program, geographic mapping program, SPICE 2G.6 graphics post-processor, and others. Extensive documentation is included. Author: Howard C. Anderson.

Fred Fish Disk 323

ColorTools	Three tools that manipulate the colors of your screen. Binary only. Author: Dieter Bruns
CZEd	A complete midi package for use with all Casio CZ synthesizers. Contains a full fledged sound editor, a split simulator for CZ-101/1000/230S, a bank loader and a memory dump for CZ-1. This is a formerly commercial package now released as shareware. Binary only. Author: Oliver Wagner
LinkSound	Two examples of functions that you can link with your own code to produce a short musical "beep" or a sound that is similar to striking a drum. Includes source. Author: Dieter Bruns
Show	A very versatile program to display IFF ILBM files. Features realtime unpacking scroll, smart analysis of any IFF file, total control over display modes, simple slideshow processing, pattern matching, and a dozen other options. Only 9K. Version 2.0, binary only. Author: Sebastiano Vigna

Fred Fish Disk 324

ANSIEd	Demo version of an ANSI screen file editor. It allows you to easily create and modify a screen of ANSI-style text/graphics on the Amiga. The standard ANSI color set (red, green, yellow, blue, magenta, cyan, white) and text styles (plain, boldface, underlined, italic) are provided, along with some simple editing and drawing functions. This demo version has the save features disabled. This is version 1.3.0, an update to version 1.2.0aD on disk 221. Binary only. Author: Greg Epley
DiskFree	An small iconifiable intuition program that shows the amount of free space available on all mounted disk devices, both numerically and graphically. Version 1.0, shareware, binary only. Author: Dieter Kuntz
DPFFT	An enhanced version of DPlot from disk 290. DPlot is a simple display program for experimental data, with the goals of supporting paging through lots of data and providing comfortable scaling and presentation. The enhancements for DPFFT include addition of a Fast Fourier Transform (FFT), display of a customized amplitude and phase spectrum, a prewhitening capability, and a Welch window for spectral smoothing. This is version 2.1, binary only. Author: A. A. Walma
Mailchk	A mail client for Dnet, which will inform you of any new mail and will give the choice of viewing, deleting, or printing a message. Version 2.01, includes source. Author: Stephane Laroche
Tetris	A PD clone of the popular Tetris type games. Written completely in assembly code. Very fast and responsive. Includes full source. Author: Andy Hook

Fred Fish Disk 325

Batchman	A program that allows the user to execute CLI programs and batch files simply by clicking on a gadget. It can be used as the center of a turnkey system, where the user simply clicks on gadgets to launch applications. Version 1.1, includes source in Modula-II. Author: Michal Todorovic
DClock	A "Dumb Clock" utility that displays the date and time in the Workbench screen title bar. Uses only about 2 percent of the CPU time and about 10Kb of memory. Also has an alarm clock feature and audible beep for programs that call DisplayBeep. This is version 1.12, an update to version 1.5 on disk 298, with many enhancements and a few bug fixes. Includes source. Author: Olaf Barthel
DoRevision	This program implements easy creation of source code revision headers (very similar to the log headers to be found at the top of the Amiga 'C' include files). Version 1.0, includes source. Author: Olaf Barthel
FAM	A File Access Manager for the Amiga that allows multiple ARexx programs to access a buffered version of a directory in a consistent and serialized manner. It buffers all the names, dates, sizes and so on, for quick access. This is version 1.1 and includes source. Author: Darren New
FarPrint	Debugging functions for programs which don't have any links to their environment. FarPrint consists of two major parts; a harbour process open to receive and distribute messages and requests, and a set of C functions to be linked into any program wishing to communicate with the FarPrint main process. This is version 1.5, an update to version 1.3 on disk 281, and adds a shared library as well as linker libraries for both Lattice and Aztec C. Includes source. Author: Olaf Barthel
KeyMacro	A keyboard macro program, configurable via a text file, that also supports hotkey program execution. You can map up to eight functions to each key, including keys such as cursor keys, the return key, etc. Version 1.0, includes source. Author: Olaf Barthel
LifeCycles	Some sort of biorhythm type program. No docs included. Version 2.0, binary only. Author: Michal Todorovic
MemGuard	MemGuard is a MemWatch-like program which has been rewritten in assembly language for maximum speed and efficiency. Unlike MemWatch MemGuard does not run as Task in a dummy loop but rather as a low-level interrupt routine which is capable of trapping memory thrashing even before exec might know of it and even while task switching is forbidden. In fact the low-memory area is checked each frame. Virtually no processing time is wasted, the interrupt routine does the check in about half a raster scan line's time. This program was contributed by Ralf Thanner, who spent three weeks programming & debugging it. In this program Ralf uses some very delicate tricks to let his interrupt routine work with Intuition alerts. Version III, binary only. Author: Ralf Thanner
RexxHostLib	This is a shared library package to simplify the ARexx host creation/management procedure. Rexx-message parsing is also included making it possible to control ARexx from programs such as AmigaBASIC (can you imagine AmigaBASIC controlling AmigaTeX?). Includes source. Author: Olaf Barthel

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CBDump	This is a CLI utility for those who are working with the Amiga's clipboard device. It's sole purpose in life is to dump the current contents of the clipboard to stdout or by redirection to a pipe or a file. Useful for testing and interfacing with programs that do not support the clipboard. Source included. Author: Stephen Vermeulen.
DispMod	One of the series of ROBBS (Rexx Object Building Block System) modules by Larry Phillips. DispMod is a display module that only understands ARexx messages. It allows, under program control, the display of text and the acceptance of keyboard data. Version 0.11, includes source. Author: Larry Phillips
Itb	This program converts an icon to an IFF picture (brush) file. It handles both single and alternate image (animated) icons. This is version 1.10 which adds a colour palette to the previous version from disk 85. Version 1.10, binary only. Author: Stephen Vermeulen.
MicroTerm	A very small, very simple, almost brain-dead terminal program. Primarily useful as an example of how to talk to the console and serial devices. Version 0.1, includes source. Author: Stephen Vermeulen.
NeuronalNets	Some programs for playing with Neuronal Nets using Hopfield and Hamming algorithms. Binary only. Author: Uwe Schaefer
PopScreen	A small hack to pop a hidden screen to the front from the CLI. This was written to allow the author to use VLTjr with other programs that also use custom screens. Source included. Author: Stephen Vermeulen.
Snap	A tool for clipping text or graphics from the screen, using the clipboard device. Snap finds out character coordinates automatically, handles different fonts, keymaps, accented characters, and more. Version 1.4, an update to version 1.3 on disk 274. Includes source. Author: Mikael Karlsson
VSnap	This is an enhanced version of Snap 1.3, submitted by Steve Vermeulen, which adds the ability to save clipped graphics as IFF FORM ILBM's to the clipboard, so they can be imported to other programs that understand IFF and the clipboard. I have dubbed it VSnap, since the official 1.4 Snap is also included on this disk. Includes source. Author: Mikael Karlsson, enhancements by Steve Vermeulen

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ARTM	ARTM (Amiga Real Time Monitor) displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, residents, interrupts, vectors, memory, mounts, assigns, fonts and hardware. Includes both a PAL and an NTSC version. This is version 1.0, an update to version 0.9 on disk 277. Binary only. Author: Dietmar Jansen and F. J. Mertens
MM	An implementation of the game Mastermind. In this game you must try to guess a color combination which the amiga sets via a random generator. There are 6 colors which can be set in any combination. Includes source. Author: Dietmar Jansen
MRBackUp	A hard disk backup utility that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. This is version 3.4, an update to version 3.3e on disk 279. Binary only. Author: Mark Rinfret
Msh	An Amiga file system handler that handles MSDOS formatted diskettes. You can use files on such disks in almost exactly the same way as you use files on native AmigaDOS disks. This is a fully functional, read/write version, that supports 8, 9, or 10 sector disks of 80 tracks, and should also work on 40 track drives and hard disks with 12 or 16 bit FAT of any dimension the FAT allows. Includes source. Author: Olaf Seibert
Softfont	Converts portrait soft fonts for HP LaserJet compatible laser printers to landscape format. Includes source. Author: Thomas Lynch

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AnalytiCalc	A full featured system for numerical analysis and reporting. Includes a spreadsheet, graphics programs, documents and facilities for performing many commonly needed functions. Features include an 18000 by 18000 cell spreadsheet using virtual memory, random access to other saved spreadsheet formulas or values, easy save or merge of partial sheets, up to 400 windows on screen, ability to drive any cell from external macros, built in matrix algebra, random number generation, date arithemetic, and much more. This is version V24-01a, an update to version V23-2A on disk 176. Binary only. Author: Glenn Everhart
Hames	Some miscellaneous programs from Chris Hames. DirWork V1.01 is a fast, small, simple efficient DirUtility. FSDirs V1.3 is a floppy accelerator program. VMK V27 is a small virus detector/killer that knows about 27 different viruses and can detect new ones. NoInfo V1.0 stops programs from producing ".info" files. Binaries only. Author: Chris Hames
RoadRoute	A trip planner that takes a list of cities and a list of known routes between cities, and generates the distance and time required to reach your destination. This is an update to version 1.0 on disk 251, with an expanded datebase of cities and roads for New Mexico, Texas, Oklahoma, Kansas, Nebraska, South Dakota, Louisiana, Arkansas, Missouri, Colorado and Mississippi, added by Fred Mayes and Gary Delzer. Includes source. Author: Jim Butterfield, Fred Mayes, Gary Delzer

Fred Fish Disk 329

CPU	Two programs, one in C and one in assembler, which check for CPU type. This version can detect 68000, 68010, 68020, and 68881 processors. Includes source. Author: Ethan Dicks, based on WhatCPU by Dave Haynie
DiskSpeed	A disk speed testing program specifically designed to give the most accurate results of the true disk performance of the disk under test. Automatically updates and maintains an ASCII database of disk results for tested disks. This is version 3.1, an update to version 2.0 on disk 288, with some source code cleanups and stress tests for CPU and DMA. Includes source in C. Author: Michael Sinz
Empire	This is a complete rewrite, from the ground up, in Draco, of Peter Langston's Empire game. Empire is a multiplayer game of exploration, economics, war, etc, which can last a couple of months. Can be played either on the local keyboard or remotely through a modem. This is version 1.33w, an update to version 1.0 on disk 118, and includes many changes and enhancements. Binary only. Author: Chris Gray, David Wright, Peter Langston
FileSystems	Displays AmigaDOS disk devices with information about the head geometry, BufMemType, and the lower level exec device. Includes source. Author: Ethan Dicks
OnePlane	Removes the highest number bitplane from the WorkBench screen. Normally used to take Workbench screen from 2 bitplanes to 1 bitplane. This allows CON: style devices to scroll text faster. Includes source. Author: Ethan Dicks

Fred Fish Disk 330

Mostra	A very versatile program to display IFF ILBM files. Features realtime unpacking scroll, smart analysis of any IFF file, total control over display modes, simple slideshow processing, pattern matching, and a dozen other options. Only 14K. This is version 1.0, an upgrade to the Show program on disk 323, and adds SHAM, double buffering, faster decompression, color cycling, TeXdocs, startup files for easy customizing, and complete WorkBench support through ToolTypes and Style icons. Binary only. Author: Sebastiano Vigna
Palette	A tool which allows you to change another program's custom screen colors. This is version 1.1, an update to the version on disk 55. New features include checks for WorkBench startups, checks for HAM, Half Brite, or more than five bitplanes, and more graceful exits. Includes source in assembly. Author: Randy Jouett, CJ Fruge, Carolyn Scheppner, Charlie Heath
Vt100	A vt100 emulator for the Amiga, which also supports various file transfer protocols like kermit, xmodem, ymodem, zmodem, etc, has an Arexx port, can use custom external protocol modules, and more. This is version 2.9a, an update to version 2.9 on disk 275. Includes source. Author: Dave Wecker, Tony Sumrall, Frank Anthes, and Chuck Forsberg
XprKermit	An Amiga shared library which provides Kermit file transfer capability to any XPR-compatible communications program. Supports version 2.0 of the XPR Protocol specification. Version 1.5, includes source. Author: Marco Papa, Stephen Walton

To Be Continued......

In Conclusion

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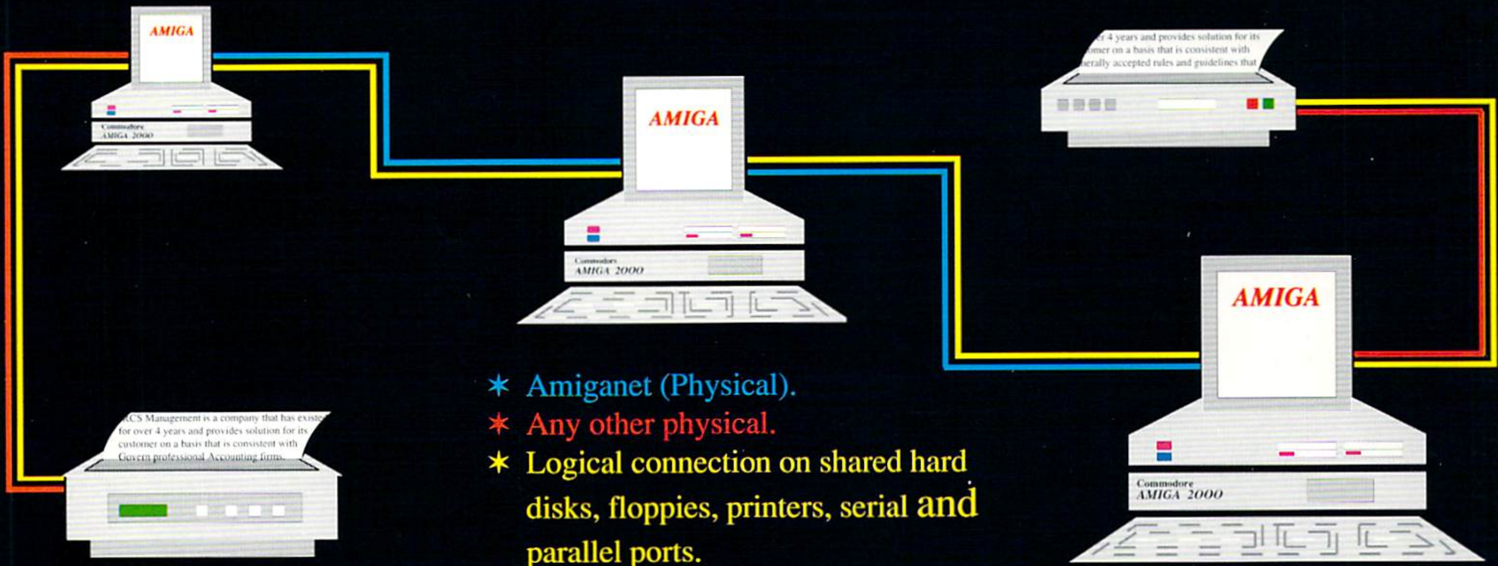
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RCS Management is a company that has existe
for over 4 years and provides solution for its
customer on a basis that is consistent with
Govern professional Accounting firms.
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omer on a basis that is consistent with
nerally accepted rules and guidelines that

- Amiganet (Physical).
- Any other physical.
- Logical connection on shared hard disks, floppies, printers, serial and parallel ports.

- Ethernet Version 2 compatible. Fully compliant with IEEE 802.3 Standard Types A and B.
- 10 Mega Baud transfer rate up to 64K Buffer memory.
- DMA Sequencer with a 16 MegaByte address range.
- DMA addressing directly to Chip and Fast RAM.
- 16 Bit Data Path.
- Every Amiga on AMIGANET may be a client as well as a server.
- Allow inter-computer communications with Data and resource sharing. (Share Hard Disk, Floppies, RAM disk, Serial Ports, Parallel Ports, Printers etc. as if they were physically attached locally!!)
- Send Messages to another user.
- Run programs on remote system.
- Excellent recovery from actual disconnection and crashes on remote Amiga's.
- Ability to know who is active on the NetWork.
- Simple installation.
- Cables and connector included.

Software Included

RCS Management

2075 University Street, suite 1712, Montreal, QC. Canada H3A 2L1 TEL:(514) 288-7825 FAX:(514)845-1472

Dealers inquiries welcome (ask for: Suresh or Katherine)

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Amiganet is a trademark of Hydra Systems Ltd.

Circle 129 on Reader Service card.

THE BEST FOR YOUR AMIGA® 2000

SupraDrive™ with WORDSYNC™

- Easy-to-Install, Autobooting Hard Card with WordSync™ Interface
- WordSync Interface Kit also available separately
- Interface transfers 16 bits at once, giving DMA Speed Without DMA Problems
- Eliminates the sound, video, and serial I/O interruptions found with DMA iinterfaces
- 1-slot design & SCSI-out port
- Easy On/Off Autoboot Jumper
- Compatible with Amiga Bridgeboard, RAM, digitizers, and other boards
- Includes SupraBoot & SupraTools — two full disks of utility software
- Up to 30 Partitions
- All available file systems supported: FFS, MS-DOS, Unix, Macintosh, etc.
- Access to low-level parameters without maintaining MountList
- Excellent Technical Support
- Made in the U.S.A.

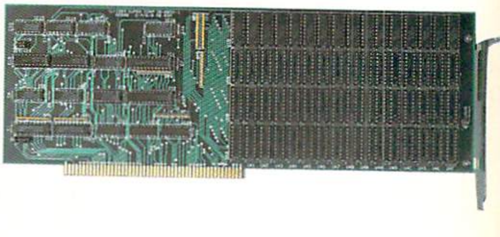
30MB (40 ms.)	**$649**
40MB (11 ms. Quantum)	**$749**
80MB (11 ms. Quantum)	**$1049**
44MB SyQuest Removable	**$1149**
WordSync Interface Kit	**$199^{95}**

SupraModem™ 2400zi

- Half card modem fits in any Amiga bus slot
- Up to 5 modems per computer
- Works with all popular Amiga telecommunications software
- 100% compatible with the industry-standard "**AT**" command set
- Asynchronous 2400/1200/300 baud operation
- Compatible with Bell 103/212A and CCITT V.21/V.22/V.22bis
- Autoanswer/Autodial (tone or pulse)
- Adjustable-volume speaker
- Nonvolatile memory stores custom modem configuration and one telephone number
- Includes free subscriptions to popular on-line services
- Made in the U.S.A.

2400zi	**$179.95**

SupraRam™ 2000



- 2, 4, 6, & 8MB configurations available
- Installs easily into any Amiga internal expansion slot
- Easy to expand from your initial configuration — Start with 2MB & add RAM at your convenience
- 6MB configuration allows for maximum benefit with the Amiga Bridgeboard
- Lets you run larger and more sophisticated programs
- Allows creation of large and extremely fast RAM disks
- Test mode & test software make troubleshooting easy
- Made in the U.S.A.

8MB RAM Board

with **2MB** installed	**$399**
with **4MB** installed	**$599**
with **6MB** installed	**$749**
with **8MB** installed	**$899**

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1133 Commercial Way Albany, OR 97321
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